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THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—16TH YEAR. SYDNEY, SATURDAY, SEPTEMBER 14, 1929. No. 11.

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Table of Contents

An Address.[1]

By JOHN CORBIN, M.B. B.S. (Adelaide),
Retiring President, South Australian Branch of the British Medical Association.

THIS being the jubilee year of the foundation of the South Australian Branch of the British Medical Association, it seemed to me that a fitting subject for my presidential address would be "A Short Sketch of Some of the Members and Activities of the South Australian Branch."

There is nowhere on record the history of the past fifty years as regards the Branch and no account of the men who originated it and have influenced its development except in the minute books which have been fortunately preserved, and in records privately made by members of the Branch and not available for publication.

The original meeting was held on June 19, 1879, at Trew's South Australian Club Hotel. Dr. Gosse was in the chair and the following motions were proposed.

1. That a Society be formed to be called the South Australian Branch of the British Medical Association.

This was moved by Dr. T. W. Corbin and seconded by Dr. Baker. An amendment was submitted:

That no new medical societies be formed.

This was moved by Dr. Seabrook and seconded by Dr. McIntyre. Dr. Cleland and Dr. Rees and Dr. Blood supported the original motion as did Dr. Morier and Dr. W. T. Hayward, who described the aims and objects of the mode of action of the British Medical Association. The resolution was carried with only two dissentients.

2. That the objects of the association are to promote the advancement of medical and surgical science by the reading and discussion of original papers and exhibition of specimens and cases, to form a bond of union among the members of the profession and a medium through which their opinions can be easily ascertained and expressed, and to advance the general and social interests of the profession.

This was moved by Dr. Hayward and carried unanimously.

3. That any legally qualified practitioner, not disqualified by any by-law of the British Medical Association, shall be eligible for membership and on giving notice to the Secretary, shall be admitted at any meeting if he obtain the votes of the majority of the members present.

This was moved by Dr. Clindening and seconded by Dr. Curtis and carried unanimously.

4. That the executive government be conducted by a council composed of a President, Vice-President, Treasurer and Secretary and three ordinary members to be elected by ballot, four to be a quorum. The Vice-President shall be the President for the ensuing year. The President shall retire annually. The Secretary and Treasurer shall retire annually and be eligible for re-election. The ordinary members shall retire annually and shall not be eligible for re-election. The elections shall take place at the annual meeting in June.

This was moved by Dr. Cawley, seconded by Dr. Blood and carried unanimously.

5. That this meeting recognises the advisability of communication between its members by means of a quarterly journal to be published as an organ of the Society in which the papers read may be printed and other matters of interest inserted.

This was moved by Dr. Gardner, seconded by Dr. F. Bailey and carried.

6. That to promote fair and honourable practice and to decide upon questions of professional usage and courtesy a committee of five be elected at the annual general meeting to be called the Ethical Committee, two of whom shall retire annually and shall not be eligible for re-election. Their duties shall be to compile a code of etiquette to be approved at a General Meeting and after such approval to carry out its provisions and to decide in all cases of dispute between members of the Association. The decision of this Committee to be final.

This was moved by Dr. Cleland, seconded by Dr. Rees and carried unanimously.

7. Each member shall, besides his contribution to the parent Association, pay to the Treasurer an annual subscription of one guinea if a country member, or two guineas if a town or suburban one, payable in advance on the first day of January. Any member neglecting to pay his subscription before the out-going January mail will cease to be a member of the Association. Each new member who joins after the 30th of June shall pre-pay half the subscription for the remainder of the year.

This was moved by Dr. Hawkins who explained that according to By-law 40 of the British Medical Association it was necessary that a branch be recognized by the parent Association. He stated that no subscription would be sent to the parent Association before January, the commencement of the financial year and that the subscription due in advance would be ten shillings and sixpence for each country member and twenty-one shillings for each town and suburban member.

The motion was seconded by Dr. Toll and carried unanimously.

8. That meetings be held monthly on the last Thursday in each month. That the annual meeting be held in June, at which an account of the receipts and disbursements shall be submitted to, and a report of the proceedings of the past year be laid before the members, the vacancies in the Council shall be filled and general business transacted. The business of the Society being concluded, the members shall dine together at which social meeting no other than the usual loyal toasts shall be proposed.

This was moved by Dr. F. Bailey, and seconded by Dr. Sprod, and carried unanimously.

The Council was then elected and the choice of the meeting fell on the following officers.

President: Dr. Gosse.

Vice-President: Dr. Corbin.

Treasurer: Dr. Hawkins.

Secretary: Dr. Cleland.

Ordinary Members: Drs. Gardner, Clindening and Way.

[1] Delivered at the Annual Meeting of the South Australian Branch of the British Medical Association on June 26, 1929.

It was then proposed that to celebrate the formation of the new Society an inaugural dinner should be held in July, and a Committee was appointed to carry out the arrangements, consisting of Dr. F. Bailey, Dr. Astles and Dr. Cleland.

It was also proposed by Dr. Morier and carried unanimously:

> That it be a distinct instruction to the Council to devote its best energies that all legitimate efforts be made to amend the *Medical Act*.

It will be seen that the objects of the original founders are fundamentally the same as those aimed at at the present day with possibly wider scope now.

How far we have departed from that part of the motion referring to the toast list at the annual dinner, the travail of past presidents and speakers and your jaded years can testify.

In January, 1880, thirty members signed a petition to the parent Association for the formation of the Branch and were the first elected members of the Association. At that time there were seventy-eight on the register of members of the medical profession in the State and at the present time there are 400 members of the South Australian Branch. The number of registered practitioners in the State is 459.

These figures give a striking indication of the increase in the work done by the medical profession for the public and the increased work necessitated for the internal administration of the Branch. The regular meetings were held in the Board room of the Adelaide Hospital.

At a council meeting held November 17, 1879, it was decided that monthly meetings should be held at 8 o'clock instead of at 8.30 p.m. on account of the gas at the hospital being turned off at 10 p.m.

At the first meeting held in 1879 it was decided to form a journal committee, to go into the question of having a local medium of communication between its members by means of a quarterly journal. This Committee reported in March, 1880, to Council and the publishing of the journal was postponed *sine die* and the resignation of the Journal Committee was accepted.

In May, 1881, the *Australasian Medical Gazette* was started and in October, 1887, arrangements were made to supply each member of the Branch with a copy published monthly.

In 1895, the *Australasian Medical Gazette* was taken over by the New South Wales Branch.

At the November meeting in 1911 of the South Australian Branch Dr. Newland moved:

> That steps be taken by the Australian Branches to acquire the *Australasian Medical Gazette* and that it should be published each week.

Negotiations between the Branches were entered upon and in 1914 arrangements were finalized whereby the *Australasian Medical Gazette* and the *Australian Medical Journal* were taken over by the Branches and incorporated in a weekly periodical called THE MEDICAL JOURNAL OF AUSTRALIA, and the first issue of this was on July 4, 1914.

The initiation of this plan was due to Dr. H. S. Newland and in the discussions that led up to the final arrangement this Branch was represented by Dr. F. S. Hone who became the first local director of the company formed to carry out the publication. Dr. (now Sir) Henry Simpson Newland and Dr. John Corbin became the first local members of the Company.

Federal Committee.

The Federal Committee which was established in 1912 largely as the outcome of the suggestions and labour of the late Dr. W. T. Hayward, has more than fulfilled the hopes of those who were mainly responsible for its inception. It has done a great deal for the furthering of the affairs of the Branch in their relations with the parent Association, each other, the public and last, but not least, has the approval of the Federal Government and is consulted by the Ministry on affairs of medical moment.

The Late Dr. W. T. Hayward.

It is fitting here perhaps to say something special concerning the late Dr. W. T. Hayward, for no story of the Branch could be considered complete without a reference to his work and interest in its affairs. He was one of the original members present at the inaugural meeting, president in 1885 to 1886, again president 1910 to 1911, secretary 1879 to 1899 and treasurer 1900 to 1909. He was also the first president of the Federal Committee in 1913, a position he held until 1922. He was awarded the gold medal of the Federal Committee for distinguished services to the profession, the first presented in Australia. He was a member of the Medical Board, honorary physician at the Adelaide Hospital and lecturer at the University. In addition to these offices, all of which he filled with great credit to himself and the Branch, he took a foremost part in every charitable project of medical interest and throughout his life was the guide for younger men and by his kindliness and tact saved many a situation that might have led to disaffection in the Branch.

Dr. F. S. Hone.

Dr. F. S. Hone was the other representative on the first Federal Council. He was president of the Branch 1911 to 1912, the first South Australian director of the Australasian Medical Publishing Company, honorary physician at the Adelaide Hospital and lecturer in clinical medicine. His work in committees and his communications to the Branch meetings are well known to members, as are his activities in all health functions, both Governmental and general.

Admission of Women as Members of the Branch.

The admission of women as members of the Branch was discussed on March 24, 1892, and was referred to members by circular for opinion. Of the 96 members at that time, 75 replied; 46 were for, 20 against and nine indifferent. That matter was sent on to the

parent Association for advice, but owing to its constitution was prohibited. Later at the Nottingham annual meeting of the parent Association held in July, 1892, it was decided by a majority of eight to one

That women should be eligible for membership.

In a report in the daily paper in reference to this it is stated that the special application of the South Australian Branch came at a most opportune time and was largely instrumental in bringing about settlement of the question.

Medical Benevolent Fund.

The first mention of the Medical Benevolent Fund is in July, 1896, when Dr. Cleland reported that a small sum of money was available from this fund to help an applicant and appealing for further subscriptions. At a Council Meeting in 1901, Dr. T. W. Corbin brought to the notice of the Council the smallness of its membership and funds and suggested that it might be taken over and controlled by a subcommittee of the Branch. This suggestion was approved in 1903. This fund still continues and is administered by members of the Branch.

Medical Defence Association.

In 1897, Dr. H. Swift brought up before the Council the report of the committee of the parent Society on the question of medical defence. He again brought up this matter in August, 1899, and at a meeting in November, 1899, it was decided that it was inexpedient to form a defence association in connexion with the Branch and questionable if the by-laws would sanction its formation. In 1909, he formed a separate association which, while undertaking to carry out the defence of its members in approved cases, also undertook the control of lodge and ethical matters. Dr. Swift became its first president and retained that office until 1928. In 1911 after consultation between the Branch and the Defence Association the control of ethical and contract matters was taken over by the Branch and administered by a committee called the "Ethical Contract Practice and Services Committee." The Defence Association still continues an active body with the limited function of defence of its members. It is fitting here to refer shortly to the work done for the Branch by Dr. H. Swift.

Dr. H. Swift.

Dr. H. Swift was president in 1898 to 1899, secretary 1893 to 1897, president of the Defence Association 1909 to 1928. He was also chairman of the British Medical Hall Company, Limited, and took a prominent part in the obtaining of the first home of the branch in Hindmarsh Square. As one of the foremost workers in the Adelaide Children's Hospital, Dean of the Faculty and honorary physician of the Adelaide Hospital and lecturer at the University, he has left an indelible mark on the professional life of the Branch. He was one of the mainstays of our monthly meetings not only in the matter of papers but in clinical exhibits as well.

The British Medical Hall Company Limited.

The British Medical Hall was obtained as a home for the Branch after negotiations extending over many months. The original scheme was the outcome of the efforts of Dr. (now Sir) Henry Newland, at that time secretary of the Branch. Dr. Swift and the late Dr. B. Poulton also took a large part in the work of its inauguration. As a result of the generosity of some members of the Branch shares in the Company to the value of £1,320 were presented to the Branch. It is to be hoped that at a not too distant date a new home for the Branch will be erected.

War Activities.

In the South African War the members of the South Australian Branch were prominent in offering their services and the Branch was well represented in the medical service.

In the European War the members of this Branch met their obligations with the best patriotism and a disregard for personal considerations.

In December, 1915, out of 250 members of the Branch in South Australia 140 were serving abroad or at home in wartime activities.

Two Australian divisions in the field and lines of communication had used 73 members from this State. Practically the whole of the profession had voluntarily conscripted itself and carried out the essential services at home and abroad and made the best provision in addition for the care of the civil population as well. From 1915 to 1919 Sir Joseph Cooke Verco was president of the Branch and with his Council directed the affairs and safeguarded in so far as possible the interest of those men who went overseas. It is unnecessary to mention the services of members of this Branch who served abroad. It is sufficient to say that they all did their best to live up to the ideals of their profession and this Branch and that they did not fail. During the war period the dinner was abandoned and the subscriptions that would have been paid were collected annually and forwarded to medical relief funds.

Sir Joseph Cooke Verco.

Here I may briefly outline the work of Sir Joseph Verco in the affairs of the Branch. It would be impossible to detail all his activities, but I shall mention some of them. He was president in 1886 to 1887, president from 1915 to 1919, Dean of the Medical Faculty and one of the earliest and greatest of the teachers in our Medical School both as lecturer and honorary physician. He has been a constant contributor to our scientific meetings and exhibitor at clinical demonstrations.

The methods and thoroughness of his teaching and the way in which his papers and exhibits have been prepared and presented will always remain as an influence upon those present and an ideal to be aimed at. He was largely responsible for the carrying out and completion of the Dental School and Hospital and was the first Dean of the Dental

Faculty. He was president of the Royal Society for nineteen years and his contributions to scientific knowledge and research outside medical matters are many and all excellent. His energies and cooperation have always been made available for all charitable work and institutions of medical and allied objects.

In addition his experience and wise guidance have been of inestimable advantage to the whole Branch.

Congress.

The first medical congress of Australia was held in Adelaide and was due to the efforts of the late Dr. Ben. Poulton to whom reference is made later.

Medical School.

The Medical School was founded in 1884, in the first place by large gifts from Sir Thomas Elder. He was largely influenced by the late Sir Edward Charles Sterling who was president of the Branch 1888 to 1889. He was the first Professor in Physiology and his influence as Honorary Surgeon at the Adelaide Hospital, lecturer and member of our Association is well remembered by all who knew him. He also became a member of the South Australian Parliament and was concerned in the obtaining of the franchise for women, the bill being introduced into Parliament by him.

Secretaries.

The first secretary was Dr. W. L. Cleland who was also president 1889 to 1890. He held the office of secretary from 1879 to 1888 and was the author of many contributions of great interest to the Branch. He was also secretary of the Royal Society. His influence was great upon the early years of the Association. He was followed by Dr. B. Poulton in 1888 to 1891 who was president 1893 to 1894 and again 1912 to 1913 and 1913 to 1914. In addition to these offices which he filled so excellently, he was for many years lecturer on surgery, senior honorary surgeon at the Adelaide Hospital and during the war gave unstintingly of his best as surgeon at the Military Hospital, Keswick. Indeed his work during the war time materially shortened his life. All who knew him feel the influence of his character and his effect upon the medical school and Branch will be lasting.

Dr. A. A. Lendon followed from 1891 to 1893, Dr. Swift from 1893 to 1897, Dr. W. T. Hayward from 1897 to 1899. Their activities have been mentioned elsewhere.

Dr. J. B. Gunson was secretary from 1899 to 1909. His work over ten years will long be remembered by all who attended meetings during his term of office. His knowledge of Association matters, great devotion to the work of the Council and the Branch and unfailing courtesy were large factors in the progress of the Branch.

He was followed by Dr. H. S. Newland from 1909 to 1918 including four years abroad at the war. We now know his as Sir Henry Newland. He was also president 1919 to 1920 and 1920 to 1921. Sir Henry is a Director of the Australasian Medical Publishing Company, Limited, proprietors of THE MEDICAL JOURNAL OF AUSTRALIA, a director of the British Medical Hall Company which managed the first home of the Branch and has been a member of the Federal Committee since Dr. Hone's retirement in 1920, and he is the acting chairman. He was also largely responsible for the foundation of the College of Surgeons of Australasia and is now the president of the College. In addition to these Branch activities he has been the honorary surgeon to the Children's Hospital, Adelaide Hospital, taken a large part in the Medical School as lecturer and clinical teacher and has been one of the most constant contributors to the scientific meetings of the Branch. Since 1919 the Secretaries have been: Dr. H. A. Powell, 1919 to 1922; Dr. B. A. Swift, 1922 to 1925; Dr. F. N. Le Messurier, 1925 to 1927; Dr. E. B. Jones, 1927 to 1929. All have done well in carrying out the work of the Branch.

Lay Secretaries.

In May, 1921, the work of the secretaries was found to have grown to such an extent that a lay secretary was appointed. The first lay secretary was Mr. R. G. C. Hodge, 1921 to 1926, followed by Mr. G. W. Bennett, 1926 to 1928, who was followed by our present lay secretary, Mr. Walter C. Dobbie.

Treasurers.

The treasurers have been: Dr. Hawkins, 1879 to 1881; Dr. T. W. Corbin, 1881 to 1900; Dr. W. T. Hayward, 1900 to 1909; Dr. J. B. Gunson, 1909 to 1912; Dr. H. Swift, 1912 to 1914; Dr. F. St. John Poole, 1914 to 1915; Dr. W. A. Verco, 1915 to 1929.

During the fifty years it will be seen we have had only seven treasurers. Of these Dr. T. W. Corbin acted for nineteen years, Dr. W. T. Hayward for nine years and our present treasurer, Dr. W. A. Verco, has held office continuously for fourteen years.

Children's Hospital.

In its inception the Children's Hospital was greatly indebted to Dr. Alan Campbell, who also founded the District Trained Nursing Society.

The Home for Incurables.

The Home for Incurables was largely influenced in its inception by Dr. W. T. Wyld and Dr. T. W. Corbin. The latter was president 1880 to 1881, treasurer from 1881 to 1900 and was throughout the whole of his career a contributor to the scientific meetings and a constant supporter of all the Branch activities. By virtue of this and as treasurer being *ex officio* a member of Council for nineteen years, his advice and experience were of the greatest help in the furtherance of the Branch.

Cancer Research.

In connexion with cancer research a large committee has been formed to assist in the investigation of the disease and its treatment. Much of the work and a large proportion of the committee are furnished by members of the Branch. Dr. F. S. Hone and the chairman, Dr. A. A. Lendon, have

done much towards its formation and the furtherance of its activities.

Dr. A. A. Lendon.

Dr. Lendon was president in 1896 to 1897 and has always been prominent in the work of the Branch. He was Lecturer in Obstetrics and also took a large part in the early history of the Queen's Home which has been the lying-in hospital and a training school for midwifery nurses and students of the Adelaide Medical School. Dr. Lendon was one of the mainstays of the Children's Hospital and was president of the District Trained Nursing Society for nineteen years. He has been for some years chairman of the Medical Board and a member of the Council of the University. His contributions and exhibits to the Branch meetings have been numerous and he has always borne his share in all the work of the Branch and its allied institutions.

Parliament.

Members of the medical profession have from time to time represented districts in the South Australian Parliament. Dr. Margarey and Dr. Alan Campbell both acted in this capacity for some years. Dr. Cockburn, later Sir John Cockburn, was Premier of this State and served as Agent-General for South Australia in London. It is a matter of regret that we as a profession are not represented at the present time, as much public good would result.

Conclusion.

It will be seen from the foregoing that the members of this Branch during the last fifty years have been zealous in their efforts to advance the affairs of the Branch and to promote all matters of medical teaching and research that would ultimately give better service to the public and indirectly advance the affairs of this State generally. I think we can justly say that there is no good movement for the benefit of the community or the individual that has not had the support of the medical profession. The enormous amount of gratuitous service that is rendered by all the honorary staffs of the various public hospitals, general, surgical, medical, infant welfare, children's hospitals and various obstetrical homes and hospitals, is such that no other profession can or does give. It must be remembered that this is coordinated and controlled in a large measure by the South Australian Branch of the British Medical Association and that wherever possible the interests of the profession and the public are safeguarded and helped by the Branch and an efficient service made possible.

Further to this is the very much greater gratuitous service that is rendered by every individual member of the Branch to the poor and needy in his own practice, a service that is difficult to measure in terms of money, but which is we hope gratefully remembered by the recipients. An appreciation of the public duties that have been assumed and carried out by members of the British Medical Association in scientific allied societies, charities and public bodies generally, added to the above, will surely justify us in the assertion that the South Australian Branch of the British Medical Association is not, as has been asserted by non-thinking people, a mere trade union, but that it is a highly scientific body of medical men actuated by the highest principles and endeavouring, while seeing that justice is done to its members, that the greatest good for the whole community it serves is obtained.

I think it a great privilege to have been your president in this, the fiftieth year of the life of the Branch, the foundation of which my father was partly responsible for and in which he laboured for so many years.

I esteem it a very great honour to have held this position and must crave your indulgence for any lack of efficiency.

In closing I would urge most emphatically that the younger members of the Branch would think sometimes of the work of the big men in the past who laboured so unselfishly and that in the future we shall never hear the query "What has the British Medical Association done for me?" but rather hear "What can I do for the South Australian Branch of the British Medical Association?"

ESTIMATION OF TOTAL CHLORIDE IN TISSUE.[1]

By WINIFRED R. MANKIN, M.Sc.,
Biochemist to the Cancer Research Committee.
(From the Department of Physiology, the University of Sydney.)

A STUDY of atoms present in living tissue has necessitated an estimation among others of chloride atoms.

On consulting the literature it is found that much work has been done on estimation of chloride in various materials.

The following is an attempt to summarize the types of methods used.

ESTIMATION OF TOTAL CHLORIDE.

Historical Summary.

Many methods have been developed for the estimation of chloride in animal tissue; as a rule, not more than ten grammes of tissue have been used.

In the first place there are methods depending on the titration of chlorides with silver nitrate in neutral solution. K. O. Larrson(1) gives a method for the estimation of chloride in twenty cubic centimetres of urine or five to ten grammes of blood. He removes the substances which interfere with Mohr's method for chloride titration by shaking with blood charcoal, filtering and titrating an aliquot portion of the filtrate. In the case of blood he coagulates it with a magnesium sulphate solution which contains a few drops of acetic acid. H. Rogée and C. Fritsch(2) describe a method for the estimation of chloride in ten subic centimetres of blood. By the addition of colloidal ferric hydroxide and magnesium sulphate they remove the

[1] This work was carried out under the control of the Cancer Research Committee of the University of Sydney and with the aid of the Cancer Research and Treatment Fund.

proteins; they then titrate an aliquot portion of the filtrate, using 0·1 normal solution of silver nitrate by Mohr's method. L. Yoder[3] chars the material after the addition of calcium acetate and again after the addition of ferric acetate, extracts with water and titrates with 0·05 normal solution of silver nitrate, using potassium chromate as indicator. A. Bornstein and Joh. Kerb[4] ash their material (tissues of rats) in quartz vessels with sodium nitrate in a muffle at red heat. The residue is taken up with hot water and the chloride content is determined by titration with 0·05 normal solution of silver nitrate, potassium chromate being used as indicator.

In the second group of methods the chlorides have been precipitated with silver nitrate in the presence of nitric acid and the excess silver nitrate is titrated with a thiocyanate solution. P. Iversen[5] and M. J. Shierbeck estimate chloride in 0·1 cubic centimetre of blood. They add to the blood 0·8 cubic centimetre of 0·1 normal solution of sodium hydroxide and four cubic centimetres of 45% solution of zinc sulphate. After heating this three minutes, it is filtered. To the filtrate is added 0·2 cubic centimetre of 29% dilution of nitric acid and one cubic centimetre of 0·01 normal solution of silver nitrate. When the precipitate has settled, the supernatant fluid is titrated with 0·005 normal solution of ammonium thiocyanate, using one drop of saturated iron alum as indicator. M. Claudius[6] estimates chloride in 0·02 cubic centimetre of blood. To the blood he adds 0·2 cubic centimetre of 0·04 normal solution of silver nitrate acidified with nitric acid and four to five drops of concentrated nitric acid. The tube is heated below boiling point till the coagulated mass dissolves. The contents are then shaken and boiled till slightly concentrated. The yellow colour is removed by the addition of a drop of 4% potassium permanganate solution. After cooling five cubic centimetres of absolute alcohol are added and then one drop of ferric nitrate solution made acid with nitric acid. After the addition of 0·5 cubic centimetre of 0·005 normal solution of potassium thiocyanate in absolute alcohol, the excess silver nitrate is titrated with this potassium thiocyanate solution. Rehberg[7] estimates chloride in blood and tissues by microtitration. His procedure is as follows: By means of a microburette 0·1 cubic centimetre of 0·15 normal solution of silver nitrate is measured into a test tube and to this is added 0·5 cubic centimetre of nitric acid; into this is measured 0·5 cubic centimetre of whole blood or plasma by means of a calibrated pipette and finally 0·5 cubic centimetre of hydrogen peroxide is added. The tube is closed by a small test tube, shaken and placed in a water bath. After heating for about one hour if plasma is used or two to three hours if whole blood is used, the tube is removed from the water bath and 0·1 cubic centimetre of concentrated solution of ferric alum is added with one cubic centimetre of ether. The whole is then titrated with 0·1 normal thiocyanate solution delivered from a microburette, the solution being stirred meanwhile by a current of air bubbles. Van Slyke[8] takes one cubic centimetre of blood or one to one and a half grammes of tissue and heats it in a "Pyrex" test tube with three cubic centimetres of concentrated nitric acid containing 0·05 normal solution of silver nitrate till a clear solution is obtained. He then adds six cubic centimetres of a 5% solution of ferric alum in water and titrates with 0·02 normal sulphocyanate solution. An empirical correction of 0·04 is subtracted from the volume of the sulphocyanate. Smirk's[9] method for the estimation of chloride is really an extension of Rehberg's method. The organic matter is destroyed by ammonium persulphate and nitric acid in the presence of silver nitrate solution, when the chloride is precipitated as silver chloride. The excess silver nitrate is titrated with ammonium thiocyanate. In the presence of acetone the end-point is more easily observed. M. Laudat[10] estimates chloride in five cubic centimetres of serum. To this he adds ten cubic centimetres of 0·1 normal silver nitrate solution and six cubic centimetres of saturated solution of potassium permanganate and ten cubic centimetres of nitric acid and heats until a clear liquid is obtained. The excess silver nitrate is titrated by Volhard's method with the use of 0·1 normal solution of potassium ferrocyanate. J. O. Halverson[11] and E. D. Wells estimate chloride in feeds, fæces and urine. They modify the official method of *The Journal of the Association of Agricultural Chemists*[12] in the following manner. After digestion of the alkaline ash with dilute nitric acid, it is filtered and the residue washed with hot water. The solution is boiled and to it is added 0·05 normal solution of silver nitrate and the boiling is continued to coagulate the silver chloride. The whole is cooled, diluted, allowed to stand three or four hours and filtered. An aliquot portion of the filtrate is titrated with 0·025 normal ammonium thiocyanate solution and ferric nitrate is used as the indicator. P. W. Robertson[13] decomposes his material with chromic acid and estimates the chloride content by a Volhard titration; 0·05 normal silver nitrate solution and 0·05 normal ammonium thiocyanate solution are used. J. Werder[14] determines chloride in fifty cubic centimetres of milk. He heats with nitric acid, cools and adds a definite volume of 0·1 normal solution of silver nitrate, heats, filters and extracts the fat with ether and titrates the excess silver nitrate with 0·1 normal ammonium thiocyanate solution. A. Weitzel[15] heats his material with either 25% nitric acid or 10% potassium hydroxide and determines chloride by a Volhard titration. He finds that simple ignition in a platinum or porcelain crucible sometimes accounts for loss of 30% of his total chloride; the result is probably due to loss as hydrochloric acid or alkali chloride. V. Rothmund[16] and A. Burgstaller find that by using Volhard's method without filtration of the silver chloride accurate results can be obtained only with considerable quantities of chloride (amounts exceeding three millemols) in small volume. Large excess of silver nitrate is favourable. The use of ammonium

thiocyanate and back titration with silver nitrate is very inaccurate. By shaking the silver chloride suspension with ether, filtration is rendered unnecessary and accurate results can be obtained with even small amounts of chloride. Drechell[17] has shown that Volhard's method as originally described is satisfactory with large quantities of chloride, but with small quantities inaccurate results are obtained. This is later confirmed by M. A. Rosanoff[18] and A. E. Hill. The reason for this is that the red colour at the end-point gradually disappears owing to the following reaction:

$$3AgCl + Fe(CNS)_3 = 3AgCNS + FeCl_3.$$

In the next group of methods chloride is driven off as hydrogen chloride or some volatile chloride which is collected in a suitable manner. Grégoire[19] and E. Carpiaux describe a method which is used for plant tissues. They heat their material with nitric acid and a little potassium permanganate in a distilling flask and collect the gases by means of suitable apparatus, chloride being collected as hydrochloric acid. I. H. ter Meulen[20] and J. Heslinga estimate chloride in twenty to fifty milligrammes of organic material by passing a mixture of hydrogen and ammonia over the material which is being ashed in a platinum boat contained in a quartz tube eighty centimetres long. The halides of ammonia which are deposited on the cold walls of the tube, are suitably collected and titrated by Volhard's method. von Bogdandy[21] determines chloride or bromide in fluid tissues. The substance is digested as for a Kjeldahl estimation, that is with sulphuric acid, copper sulphate and potassium sulphate in a round bottomed Jena flask connected to wash bottles of special construction which contain nitric acid and silver nitrate solution. A feeble current of air is drawn through the whole system and digestion is continued till the contents of the Jena flask are clear. Precipitated chloride or bromide is determined in the usual way.

Some investigators have separated chlorine from the chlorides and determined the amount obtained. R. D. Bell[22] and E. A. Doisy digest their material, for example, blood or a few grammes of milk, with concentrated sulphuric acid, then they add ammonium or potassium persulphate and heat until the solution is clear and colourless. The free chlorine gas evolved is carried over by an air current with the aid of suitable apparatus into a solution of sodium sulphite which is formed by the solution of sulphur dioxide, given off during digestion, in sodium carbonate solution. When digestion is complete, the solution containing chloride is made just acid to methyl orange and is boiled till there is no further evolution of carbon dioxide or sulphur dioxide. After cooling, a standard solution of silver nitrate made acid with nitric acid is added. The solution after being boiled to coagulate the silver chloride is centrifuged and an aliquot portion of it is titrated with potassium iodide, soluble starch being used as the indicator.

Much attention has been given to the oxidation of organic materials either containing chlorides or mixed with chlorides. J. D. Filippo[23] and W. Adriani do not think that the loss of chloride in the incineration of food stuffs is due to the presence of acid phosphates. They state that there is considerable loss of chloride when phosphate-free material is ashed and also that chlorides when heated with ash-free carbon compounds or pure carbon give an alkaline ash due to sodium carbonate, hydrochloric acid being given off. Another worker finds that on heating a mixture of sodium chloride and potassium chloride with pure lactose there is a loss of 22% to 33% of chloride. S. Gutmann[24] and F. Schlesinger say that von Bogdandy's method gives low results because of chlorate formation during digestion; they therefore advise the use of the following method. They add half a gramme of sodium carbonate to ten cubic centimetres of serum, evaporate to dryness on a water bath and ash with the occasional addition of a few drops of water, wash the melt with hot water and precipitate the chloride as silver chloride.

Reference may be made to some methods which have occasionally been used. M. Delaville[25] and D. Brown estimate chloride in organs and blood by heating them with nitroso-nitric acid in the presence of a nitric acid solution of silver nitrate and the chloride is weighed as silver chloride after drying one hour at 105° C.. J. Jung[26] detected chloride in slides made of plant tissue by means of either of the following reagents: (*a*) 0·5 gramme of thallium acetate, 2·0 grammes of glycerol, 7·5 grammes of distilled water, or (*b*) 1·0 gramme of silver nitrate, 9·9 grammes of 10% ammonia.

A characteristic crystalline precipitate is formed in either case which can easily be identified under the microscope. Bond[27] and Southward use an electrometric method for the estimation of chloride in body fluids. They find that their results agree well with those obtained by means of Volhard's method modified so that silver chloride is removed before titration. E. Votecek[28] titrates chlorides with a standardized solution of mercuric nitrate in the presence of a small amount of nitric acid; sodium nitro-prusside is used as the indicator. Sulphites and nitrites must not be present.

Method Adopted.

For purposes needed in the researches that are being carried out, it is found necessary to use a method which gives accurate results with one gramme of material. After numerous attempts to determine the chloride content of substances by carefully dry ashing them, this method is found to be unsuitable mainly because there is frequently a loss of chloride; some materials, for example, egg yolk (which has an acid reaction) lose all their chloride, probably as hydrogen chloride. After numerous modifications have been tried, the following method is found to work satisfactorily. From 0·2 to 1·0 gramme of material, depending on the amount available, is weighed by difference in a corked glass test tube (about two and a half by

fifteen centimetres). Five to ten cubic centimetres of a 0·01 normal solution of silver nitrate, according to the weight of the material, are then run into the uncorked tube from a five cubic centimetre burette whose divisions measure 0·05 cubic centimetre, but which delivers three drops per division. Finally five cubic centimetres of concentrated nitric acid are added and the tube is stood in boiling water in a bath till digestion of its contents is complete and the volume has concentrated to about three cubic centimetres. This takes at least four hours. The tube is cooled and about six cubic centimetres of distilled water are added, together with three drops of a saturated solution of ferric alum; the whole is titrated with 0·01 normal solution of ammonium thiocyanate from a five cubic centimetre burette graduated to 0·05 cubic centimetre. Owing to the yellow colour of the solution, difficulty is experienced in noting the first change of colour of a solution from yellow to yellowish red, the end-point of the reaction. To overcome this difficulty a blank is stood beside the solution being titrated. The blank consists of a duplicate tube with approximately the same quantity of material (similar material if that were available, other organic material if not) treated in the same way, so that practically the same shade of yellow is produced; to this less than the quantity of ammonium thiocyanate necessary to complete the titration has been added. By this method the end-point is more readily observed and the error has not been greater than one drop of 0·01 normal solution of ammonium thiocyanate.

All reagents used were tested and found to be chloride free.

Experience shows that no chloride is lost during the heating of the mixture with nitric acid, provided that excess of silver nitrate is present, but in the absence of sufficient silver nitrate there is always loss of chloride. There is no need to filter off coagulated silver chloride, as the end-point is quite sharp. The importance of calibrating the micro-burette against the burette used to deliver the standard silver nitrate solution is evident. The process of heating must be continued until the fluid is clear. It has been found important to continue heating until the volume of fluid is less than five cubic centimetres. This keeps the volume of the solution which is to be titrated, at a minimum and makes observation of the end-point easier. Agreement between duplicate results depends on the eye of the observer being kept in training to note minute changes in colour.

Accuracy of Method.

Other halides have not been found present in sufficient quantity to interfere with the accuracy of the estimation of chloride in one gramme of the material which has been utilized in these researches. Tables I and II demonstrate the accuracy of determinations on the same sample of material. It will further be seen that the accuracy of the method is increased by taking a greater quantity of similar material for individual determinations.

In Table I is recorded the results of determinations of chlorides in the muscle of the ox. A piece of rumpsteak was cut up with a scalpel into pieces weighing about fifty milligrammes. These pieces were mixed together and several of them were used for each determination. The results demonstrate that estimations with weights ranging from 0·1742

TABLE I.

Weight of Muscle in Grammes.	Weight of Chloride Estimated in Milligrammes.	Chloride Content, Milligrammes per Gramme.	Mean Chloride Content, Milligrammes per Gramme.
0·1742	0·121	0·696	0·6220
0·186	0·113	0·6042	
0·1875	0·109	0·5805	
0·1886	0·125	0·6662	
0·2027	0·145	0·7158	
0·2099	0·117	0·5565	
0·2138	0·135	0·629	
0·2293	0·142	0·6213	
0·2587	0·151	0·5849	
0·265	0·165	0·6212	
0·3767	0·219	0·5808	
		Mean 0·6220	

$\frac{(D)^2}{n-1}$ = Standard deviation.

$0·67 \times S.D.$ = Probable error.

$\frac{S.D.}{Mean}$ = Coefficient of variability.

gramme to 0·3767 gramme yield an average figure of 0·62 milligramme per gramme of chloride content. The probable error of this series of determinations is 5·17%.

Applying the above formulæ to the results obtained from Table VI, the following figures have been calculated:

Average deviation = 0·0387.
Standard deviation = 0·048.
Coefficient of variability = 0·077.
Probable error = 0·0308.

$$\text{Probable error} = \frac{0·0308}{0·622} \times 100 = 5·17\%.$$

Table II is a record of results with muscle of sheep. The muscle has been prepared in the same way as that used for the estimations recorded in Table I. The results show that estimations on pieces of material ranging in weight from 0·3575 gramme to 0·6979 gramme yield an average figure of 0·5233 milligramme per gramme of chloride. This concen-

TABLE II.

Weight of Muscle in Grammes.	Weight of Chloride Estimated in Milligrammes.	Chloride Content, Milligrammes per Gramme.	Average Chloride Content, Milligrammes per Gramme.
0·3573	0·181	0·5062	0·5233
0·5061	0·2672	0·5286	
0·5361	0·2935	0·5474	
0·5785	0·323	0·5597	
0·6501	0·337	0·5178	
0·6784	0·336	0·4963	
0·6979	0·353	0·5074	
		Mean 0·5233	

Average deviation = 0·0187
Standard deviation = 0·0323
Coefficient of variability = 0·044
Probable error = 0·0155

$$\text{Probable error} = \frac{0·0144 \times 100}{0·5233} = 2·97\%$$

tration is of the same order as that given in Table I; however, as the quantity taken for individual determinations has been greater than that listed in Table I, the probable error has been reduced to 2·9%.

There will be some variation in the chloride content of the individual samples shown in Tables I and II owing to the samples not being completely homogeneous; further the amount of chloride estimated is small.

From Tables III and IV it is seen that when samples of a more homogeneous material, egg white, are used in larger amounts, containing a higher percentage of chloride, a greater degree of accuracy is obtained.

The samples are obtained in the following manner. After the egg is opened carefully, the white and yolk are separated, placed in glass bottles and beaten with two scalpels to insure a thoroughly homogeneous mixture and the bottles are stoppered tightly except when material is being removed from them.

TABLE III.

Weight of Material in Grammes.	Weight of Chloride Estimated in Milligrammes.	Chloride Content, Milligrammes per Gramme.	Average Chloride Content, Milligrammes per Gramme.
0·9533	1·765	1·85	1·804
1·0914	1·96	1·8	
1·1736	2·01	1·8	
1·2304	2·215	1·8	
1·4228	2·57	1·81	
1·6646	2·95	1·78	
1·6913	2·99	1·77	
1·8645	3·39	1·82	
		Mean 1·804	

Average deviation = 0·016
Standard deviation = 0·02478
Coefficient of variability = 0·013
Probable error = 0·0166

$$\text{Probable error} = \frac{0\cdot0166\times100}{1\cdot804} = 0\cdot92\%$$

Tables VA and VB give results on the same sample of egg white which had been well mixed and prepared in a manner similar to that recorded in Table III. From Table VA it is seen that the average chloride content of this sample is 1·71 milligrammes per gramme. From Table VB it is seen that on adding a known weight of chloride to each individual sample of material (0·9863 milligramme chloride in five cubic centimetres of a solution of sodium chloride delivered from a standard burette) that the average recovery is 100%.

TABLE IV.

Weight of Material in Grammes.	Weight of Chloride Estimated in Milligrammes.	Chloride Content, Milligrammes per Gramme.	Average Chloride Content, Milligrammes per Gramme.	Difference from Mean.
0·7054	1·175	1·67	1·64	0·03
0·9732	1·585	1·63		0·01
1·127	2·08	1·64		0·00
1·4951	2·45	1·64		0·00
1·6066	2·635	1·64		0·00
1·6171	2·67	1·65		0·01
2·0877	3·4	1·63		0·01
2·1289	3·45	1·62		0·02
				Mean 0·01

Average deviation = 0·01
Standard deviation = 0·01517
Coefficient of variability = 0·0092
Probable error = 0·01

$$\text{Probable error} = \frac{0\cdot01\times100}{1\cdot64} = 0\cdot62\%$$

TABLE VA.

Weight of Material in Grammes.	Chloride found on Analysis in Milligrammes.	Chloride found on Analysis, Milligrammes per Gramme.	Average Chloride Content, Milligrammes per Gramme.	Difference from Mean.
0·7727	1·343	1·74	1·71	0·03
1·0685	1·837	1·72		0·02
1·0844	1·875	1·73		0·02
1·2225	2·075	1·7		0·01
1·2311	2·092	1·70		0·01
1·2975	2·23	1·72		0·01
1·3154	2·261	1·72		0·01
1·5276	2·58	1·69		0·02
2·1917	3·725	1·69		0·02

Table VI shows that the probable error as estimated on a comparatively large number of determinations is practically the same as that estimated on a much smaller number (compare Tables III and IV with Table VI). It is shown that in twenty estimations of chloride on weights of egg white,

TABLE VB.

(1) Weight of Material in Grammes.	(2) Chloride found on Analysis in Material with Added Chloride in Milligrammes.	(3) Chloride Present in Material in Milligrammes. (1) × (7)	(4) Added Chloride in Milligrammes.	(5) Chloride Recovered in Milligrammes. (2)−(3)	(6) Chloride found on Analysis in Material with Added Chloride, Milligrammes per Gramme.	(7) Chloride Present in Tissue, Milligrammes per Gramme.	(8) Added Chloride by Difference, Milligrammes per Gramme. (6)−(7)	(9) Chloride Added, Milligrammes per Gramme. (4) ÷ (1)	(10) Chloride Added Subtracted from Added Chloride Estimated by Difference, Milligrammes per Gramme. (8)−(9)	(11) Percentage Added Chloride Recovered.
0·6	2·01	1·026	0·9638	0·984	3·35	1·71	1·64	1·61	0·03	102
0·8049	2·35	1·375	0·9638	0·975	2·94		1·23	1·2	0·03	101·5
0·912	2·55	1·56	0·9638	0·99	2·8		1·09	1·06	0·03	103
0·975	2·65	1·667	0·9638	0·983	2·72		1·01	0·99	0·02	102
0·9891	2·65	1·69	—	0·960	2·68		0·97	0·977	0·007	99·3
1·1075	2·928	1·895	0·9638	1·093	2·69		0·98	0·95	0·03	103
1·0565	2·79	1·805	0·9638	0·985	2·64		0·93	0·912	0·018	102
1·167	2·96	1·995	0·9638	0·965	2·54		0·83	0·826	0·004	100·5
1·2674	3·15	2·167	0·9638	0·983	2·49		0·78	0·76	0·02	102·5
1·3107	3·2	2·242	0·9638	0·958	2·44		0·73	0·736	−0·006	99·2
1·3735	3·26	2·348	0·9638	0·912	2·37		0·66	0·702	−0·042	94
										Average 100·8

ranging from 0·6 gramme to 2·1917 grammes the deviations from the average ranged from –0·02 to +0·03. These deviations are within the experimental error of the method. This fact suggests that the method of obtaining homogeneous samples is a good one. This table has in common with Tables III and IV the fact that the probable error is reduced by taking a greater weight of material containing a higher chloride concentration. The material has been prepared similarly to that referred to in connexion with Table III.

TABLE VI.

Weight of Material in Grammes.	Weight of Chloride Estimated in Milligrammes.	Chloride Content, Milligrammes per Gramme.	Average Chloride Content, Milligrammes per Gramme.	D.	D^2.
0·60	1·0462	1·74	1·717	0·02	0·0004
0·7727	1·34	1·74		0·02	0·0004
0·8049	1·4	1·74		0·02	0·0004
0·912	1·585	1·74		0·02	0·0004
0·975	1·685	1·73		0·01	0·0001
0·9891	1·68	1·7		0·02	0·0004
1·0175	1·77	1·74		0·02	0·0004
1·0565	1·83	1·73		0·01	0·0001
1·0685	1·84	1·72		0·00	0·00
1·0844	1·875	1·73		0·01	0·0001
1·225	1·91	1·7		0·02	0·0004
1·167	1·995	1·71		0·01	0·0001
1·2311	2·09	1·7		0·02	0·0004
1·2674	2·19	1·73		0·01	0·0001
1·2975	2·22	1·715		0·00	0·000
1·3107	2·23	1·70		0·02	0·0004
1·3154	2·26	1·72		0·00	0·00
1·3735	2·29	1·67		0·05	0·0025
1·5276	2·58	1·69		0·03	0·0009
2·1917	3·7	1·69		0·03	0·0009
		Mean 1·717			0·0084

Standard deviation = 0·021
Coefficient of variability = 0·0122
Probable error = 0·014

$$\text{Probable error} = \frac{0\cdot014\times100}{1\cdot717} = 0\cdot82\%$$

In accordance with the theory of probable error half the measurements should lie between (1·717 + 0·014) and (1·717 – 0·014). It will be seen from the above table that twelve out of twenty do lie between those limits.

Chloride Determinations on Eggs of the Domestic Fowl.

The following figures have been obtained when eggs bought from a local store are used. The average weight of material used for an individual determination is one gramme.

The figures shown in the above table indicate that the chloride concentration in white is higher than in yolk except in three cases in which it is approximately the same and that the chloride concentration of whites from different eggs varies from 1·39 milligrammes per gramme to 2·02 milligrammes per gramme and in yolks from 1·23 milligrammes per gramme to 1·74 milligrammes per gramme. It becomes apparent that the chloride concentration of whites and yolks of eggs may be influenced by various factors, for example, (i) age, (ii) solid content, (iii) degree of homogeneity of material, (iv) source of the egg, that is whether the eggs come from the same or different fowls, (v) fertility of the egg.

TABLE VII.

Number of Egg.	Average Chloride Content of Each White, Milligrammes per Gramme.	Number of Determinations to produce Average.	Chloride Content of Yolk, Milligrammes per Gramme.	Number of Determinations to produce Average.
1	1·88	4	1·49	5
2	2·02	5	1·44	4
3	1·92	5	1·5	6
4	1·72	5	1·37	3
5	1·86	4	1·32	4
6	1·74	6	1·74	6
7	1·39	3	1·26	3
8	1·64	4	1·65	3
9	1·82	3	1·23	3
10	1·64	3	1·33	3

With regard to (i) it has been found that an egg which is kept at ordinary atmospheric temperature and pressure in a laboratory, loses approximately 0·1 gramme of its weight per day (see Table VIII).

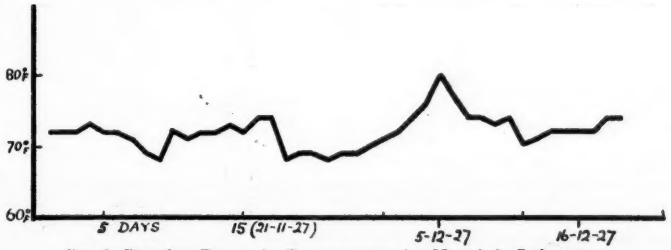
TABLE VIII.

Date of Weighing.	Weight of Egg in Grammes (P8).	Loss in Weight between Weighings in Grammes.
8/11/27	62·987	—
9/11/27	62·8394	0·1386
10/11/27	62·7339	0·1055
11/11/27	62·645	0·0889
14/11/27	62·321	0·3240
15/11/27	62·2135	0·1075
17/11/27	62·0036	0·2099
18/11/27	61·8859	0·1177
21/11/27	61·57	0·3159
22/11/27	61·4634	0·1066
23/11/27	61·3725	0·0909
24/11/27	61·2632	0·1093
25/11/27	61·167	0·0962
28/11/27	60·918	0·249
29/11/27	60·8015	0·1165
1/12/27	60·6045	0·197
2/12/27	60·503	0·1015
5/12/27	60·2086	0·2944
7/12/27	59·872	0·3366
16/12/27	59·047	0·825

$$\text{Average loss per day} = \frac{3\cdot931}{38} = 0\cdot103 \text{ gramme.}$$

The temperature during this period varied between 20° C. (68° F.) and 26·5° C. (80° F.). (see Graph) and the atmosphere was approximately 70% saturated with moisture. As this loss is mainly water and carbon dioxide, it will directly affect the solid content.

With reference to (iii) Table IXA records a number of experiments which have been carried out on unmixed egg material, so that different con-



Graph Showing Range in Temperature (at Noon) in Laboratory from November 7, 1927, to December 16, 1927.

centrations of chloride in different portions of egg white and egg yolk, if present, should be shown.

A similar series of experiments to those recorded in Table IXA has been carried out, with the exception that the material has been well mixed to insure a homogeneous mass (see Table IXB).

A study of Table IXA shows that four out of eight calculations have an error (difference between highest and lowest determination) greater than one should expect, whereas in Table IXB only two out of twelve show such an error. This would suggest that there are slight differences in the concentration

TABLE IXA.

Number of Egg.	Weight of Egg White in Grammes.	Chloride Concentration in White, Milligrammes per Gramme.	Mean.	Deviation.	Weight of Egg Yolk in Grammes.	Chloride Concentration in Yolk, Milligrammes per Gramme.	Mean.	Deviation.
1	0·9993	1·91	1·88	0·03	1·5228	1·55	1·49	0·06
	1·0431	1·9		0·02	1·1376	1·47		0·02
	1·6217	1·82		0·06	1·1047	1·53		0·04
	1·4898	1·89		0·01	1·7276	1·51		0·02
					1·2459	1·38		0·11
Difference between highest and lowest determinations		0·07				0·17		
2	0·8345	2·01	2·02	0·01		1·39	1·44	0·05
	0·8726	1·99		0·03		1·47		0·02
	1·1	1·97		0·05		1·46		0·02
	1·2884	1·95		0·07		1·43		0·01
Difference between highest and lowest determinations		0·06				0·08		
3	0·8361	1·96	1·92	0·04	0·8868	1·58	1·5	0·08
	1·0542	1·93		0·01	1·7415	1·51		0·01
	1·0942	1·94		0·02	0·9034	1·37		0·13
	1·4431	1·86		0·06	1·1807	1·45		0·05
	1·4833	1·93		0·01	0·6542	1·58		0·08
					0·9962	1·52		0·02
Difference between highest and lowest determinations		0·1				0·21		
4	1·2397	1·74	1·72	0·02	1·126	1·27	1·37	0·1
	1·6326	1·85		0·13	0·9836	1·33		0·04
	1·3707	1·57		0·15	1·7253	1·52		0·15
	1·3052	1·64		0·08				
	1·1135	1·78		0·06				
Difference between highest and lowest determinations		0·28				0·25		

TABLE IXB.

Number of Egg.	Weight of Egg White in Grammes.	Chloride Concentration in White, Milligrammes per Gramme.	Mean.	Deviation.	Weight of Egg Yolk in Grammes.	Chloride Concentration in Yolk, Milligrammes per Gramme.	Mean.	Deviation.
5	1·4221	1·88	1·86	0·02	0·9081	1·34	1·32	0·02
	1·3724	1·85		0·01	0·9903	1·33		0·01
	0·7434	1·86		0·00	1·2323	1·3		0·02
	0·7373	1·85		0·01	1·0483	1·31		0·01
Difference between highest and lowest determinations		0·03				0·04		
6	2·0686	1·72	1·74	0·02	0·8984	1·79	1·74	0·05
	0·9347	1·76		0·02	1·1609	1·73		0·01
	1·3381	1·7		0·04	1·0162	1·75		0·01
	1·2331	1·73		0·01	1·3336	1·69		0·05
	0·964	1·75		0·01	0·8897	1·73		0·01
	0·8831	1·77		0·03	0·9632	1·76		0·02
Difference between highest and lowest determinations		0·07				0·1		
7	1·8768	1·4	1·39	0·01	1·277	1·19	1·26	0·07
	1·1078	1·43		0·04	1·7648	1·33		0·07
	0·9968	1·35		0·04	1·7792	1·25		0·01
Difference between highest and lowest determinations		0·08				0·14		
8	1·0732	1·63	1·64	0·01	0·9904	1·69	1·65	0·04
	1·2473	1·58		0·06	0·8634	1·64		0·01
	0·8807	1·65		0·01	1·4482	1·63		0·02
	0·9064	1·68		0·04				
Difference between highest and lowest determinations		0·1				0·06		
9	1·3189	1·82	1·82	0·0	1·0567	1·24	1·23	0·01
	2·2597	1·82		0·0	0·8562	1·19		0·04
	0·9908	1·81		0·01	1·0982	1·27		0·04
Difference between highest and lowest determinations		0·01				0·04		
10	0·7993	1·62	1·64	0·02	0·2647	1·36	1·33	0·03
	1·3794	1·65		0·01	1·1894	1·2		0·13
	1·2028	1·65		0·01	1·5223	1·43		0·10
Difference between highest and lowest determinations		0·03				0·23		

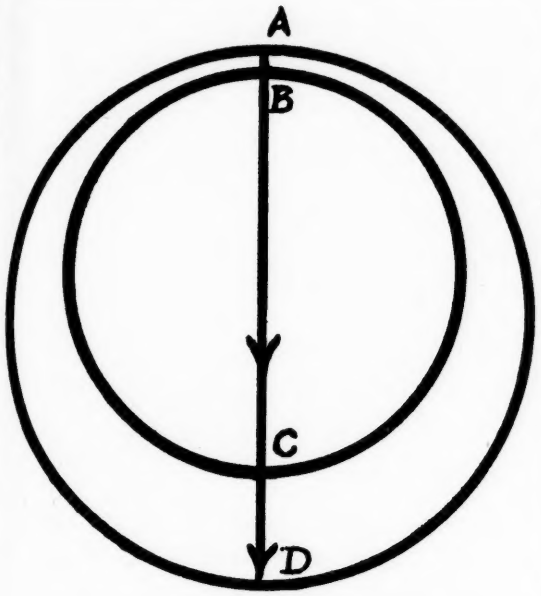


FIGURE I.
A to B = 0·84 millimetre, B to C = 31·0 millimetres, C to D = 7·58 millimetres.

of chloride in different parts of the egg, both in the white and in the yolk.

Table X shows a series of determinations on eggs which have been laid by the same fowl, which laid an average of four eggs per week. The material has been prepared similarly to that referred to in Table III.

Summary.

1. A method for the accurate determination of chloride in one gramme of material is described.
2. The chloride concentration of egg white is usually higher than that of yolk from the same egg.
3. The chloride concentration varies considerably in whites from eggs laid by different hens. The same is found to apply in the case of egg yolks.
4. The variations noted in paragraph 3 are not so pronounced when the eggs are laid by the same fowl.
5. There appears to be some evidence for stating that the chloride concentration varies in different portions of egg white and egg yolk.
6. An egg kept in a laboratory under ordinary atmospheric conditions loses approximately 0·1 gramme of its weight per day.

II.

Much work has been done by exposing hens' eggs to the action of X rays. As the effect of a beam of these rays depends on the intensity of the rays absorbed and as that depends on the number and nature of the atoms with which the rays come into contact, as work has been done on the chloride concentration of eggs, it is thought that it would be interesting to have some approximate idea of the

TABLE X.

Number of Egg.	Laid.	Incubated.	Examined.	Weight of Egg White in Grammes.	Chloride Concentration, Milligrammes per Gramme.	Mean Chloride Concentration, Milligrammes per Gramme.	Percentage of Solid.	Weight of Yolk in Grammes.	Chloride Concentration, Milligrammes per Gramme.	Mean Chloride Concentration, Milligrammes per Gramme.	Percentage of Solid.
P1	10/11/27		11/11/27	1·0757 1·0865 1·4	1·5 1·52 1·56	1·54	11	1·5167 1·1135 1·2766	1·72 1·66 1·63	1·67	51·4
P2	11/11/27		16/11/27	0·717 1·2302 0·623	1·75 1·66 1·77	1·73	11	2·3641 1·4293	1·56 1·57	1·57	51
P3		One day		1·3669 0·9523 1·9797	1·73 1·73 1·73	1·73	11	1·0566 1·0515 1·0021	1·63 1·7 1·71	1·68	51
P4	18/11/27	21/11/27 to 22/11/27	22/11/27	1·3325 1·0937 0·8175	1·75 1·65 1·69	1·7	11·7	0·6736 1·1518	1·66 1·61	1·64	51·3
P5	19/11/27		23/11/27	1·2172 1·2628 2·0851	1·61 1·58 1·73	1·64	10·8	0·8614 1·1394 1·2104	1·5 1·42 1·42	1·46	51·8
P6	1/12/27		5/12/27	1·6694 1·6809 1·0294	1·63 1·62 1·62	1·62	11·2	1·0421 1·3734 1·2088	1·43 1·39 1·37	1·4	53·4
P7	10/12/27	12/12/27 to 14/11/27	14/12/27	1·2152 1·7410	1·63 1·67	1·65		1·2003 1·3824 1·0526	1·46 1·45 1·42	1·44	
P8	7/11/27		16/12/27	0·9276 0·907 0·9003	2·1 2·09 2·09	2·09	12·5	0·854 1·0679 1·0266	1·52 1·64 1·45	1·5	48
P9	22/12/27		About four hours later	1·158 1·1743 2·0952	1·62 1·63 1·62	1·62	11·5	1·0573 1·1261 1·1195	1·64 1·61 1·58	1·61	51·8
P10	28/12/27		29/12/27	1·2307 0·7155 0·8508	1·59 1·62 1·61	1·61	10·7	1·1036 1·1853 1·1805	1·61 1·61 1·59	1·6	53

NOTE.—Egg P8 had been kept for thirty-nine days before examination. If the solid of its white had been 11%, its average chloride content would have been 1·83 milligrammes per gramme.
The eggs were laid between the dates given.

number of atoms of chloride which are contained in a definite, small four-sided right-angled prism of egg material. Such a prism is one 0·05 millimetre by 0·05 millimetre in a direction shown by the arrow in Figure I. In order to obtain the length of such a prism, it is necessary to obtain a circular section of an egg at right angles to the long axis and in such a position that its area of section is a maximum.

The most convenient method of fixing the egg components in such a state that the above section can be obtained is that of boiling the egg till "hard." The following is an attempt to calculate the number of atoms in the prism to which reference has been made (see Figure I).

Average weight of egg yolk	18 grammes.
Average weight of egg white ..	32 grammes.
Density of yolk	1·016
Density of white	1·05

Taking white as containing 1·73 milligrammes of chloride per gramme and yolk as containing 1·56 milligrammes of chloride per gramme, the following figures have been calculated:

One cubic centimetre of white contains

$0{\cdot}00173 \times 1{\cdot}05$ grammes of chloride, that is supposing the chloride atom evenly distributed throughout the white.

The weight of chlorine atom =

$1{\cdot}66 \times 10^{-24} \times 35{\cdot}5$ grammes.

One cubic centimetre of white contains

$$\frac{0{\cdot}00173 \times 1{\cdot}05}{1{\cdot}66 \times 10^{-24} \times 35{\cdot}5} = 308 \times 10^{17} \text{ atoms.}$$

Taking a section 0·5 millimetre by 0·5 millimetre through an egg, then the number of chloride atoms contained therein would be:

$$\frac{0{\cdot}00173 \times 1{\cdot}05 \times 0{\cdot}758 \times 0{\cdot}05 \times 0{\cdot}05}{1{\cdot}66 \times 35{\cdot}5 \times 10^{-24}} + \frac{0{\cdot}00156 \times 1{\cdot}016 \times 3{\cdot}1 \times 0{\cdot}05 \times 0{\cdot}05}{1{\cdot}66 \times 35{\cdot}5 \times 10^{-24}} + \frac{0{\cdot}00173 \times 1{\cdot}05 \times 0{\cdot}084 \times 0{\cdot}05 \times 0{\cdot}05}{1{\cdot}66 \times 10^{-24} \times 35{\cdot}5}$$
$$= 5{\cdot}84 \times 10^{16} + 2{\cdot}1 \times 10^{17} + 6{\cdot}5 \times 10^{15}$$
$$= 27{\cdot}49 \times 10^{16}.$$

It should be noted that it is not assumed that the beam of rays will necessarily have the same width as the prism or that every atom in the prism will absorb some of the rays. The previous calculation is merely one of relative interest. The following gives a method of obtaining the intensity of a beam of rays absorbed while travelling through an egg in the same direction as that of the prism.

If I_o = intensity of X rays entering the egg in the same direction as the aforementioned prism

and I = intensity of X rays leaving the egg,

then $I_o - I$ = intensity of X rays absorbed by medium.

Let $I_o - I = E$

and substituting the well-known equation $I = I_o e^{-\frac{\mu}{\rho}m}$ in the above, then:

$$E = I_o\left(1 - e^{-\frac{\mu}{\rho}m}\right)$$

$$\text{Percentage absorbed} = \frac{I_o\left(1 - e^{-\frac{\mu}{\rho}m}\right) \times 100}{I_o}$$

$$= 1 - e^{-\frac{\mu}{\rho}m} \times 100.$$

$\frac{\mu}{\rho}$ for $\eta(0{\cdot}586 \times 10^{-8})$ in chlorine is 6·394.

m = mass in grammes of chlorine in unit cross section taken in the prism across (for chlorine) in egg white and yolk

$= 0{\cdot}00173 \times 1{\cdot}05 \times 0{\cdot}842 + 0{\cdot}00156 \times 1{\cdot}016 \times 3{\cdot}1$

$= 0{\cdot}006442$ gramme.

$$\text{Percentage absorbed} = 1 - e^{-6{\cdot}394 \times 0{\cdot}006442} \times 100$$
$$= 4{\cdot}03\%.$$

Summary.

It is seen that 4·03% of the intensity of a beam of X rays ($\eta 0{\cdot}586 \times 10^{-8}$) will be absorbed while travelling through an egg in the direction indicated.

Acknowledgement.

My thanks are due to Dr. Chapman, Director of Cancer Research, and Professor Priestley, of the Department of Physiology, for their help and advice during the progress of this work.

I am indebted to Mr. Love, of the Cancer Research Department, for some of the physical data given in the last calculation of Part II.

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SOME ASPECTS OF POST-GRADUATE WORK IN LONDON.[1]

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WHEN asked to read a paper on my travels, my reply was that I had done very little actual sight seeing, most of my time being spent at the various hospitals and clinics about London. I thought that perhaps it might be of some interest to touch on some of the teaching on medical subjects in London at the present time.

There are plenty of opportunities for medical post-graduate work and the arrangement of most of the courses is done by the Fellowship of Medicine and Post-Graduate Medical Association, of Number 1, Wimpole Street. Here one is received very cordially by the lady secretary and cards can be taken out for courses in various subjects in the hospitals which are open to the Fellowship.

Besides these courses the London Hospital and the Middlesex Hospital, as well as some other smaller hospitals, have their own special post-graduate courses.

The London Hospital provides a course suitable for senior medical degrees, as well as for the Army and Navy Services, which is held thrice yearly and lasts for ten weeks. The courses are held thrice weekly and consist of lectures in clinical pathology, bacteriology, hæmatology, applied physiology, neurology and of bedside instruction in medical cases.

Dr. Clark Kennedy lectured on applied physiology; Dr. Donald Hunter gave most interesting and enlightening lectures on clinical pathology, as well as giving instruction during his session in the out-patients' department. His lectures were always very well illustrated with prepared pathological specimens. Dr. Hunter is also the Curator of the London Hospital Pathological Museum. In his teaching he lays great stress on the value of medical history in demonstrating the evolution of knowledge concerning medical subjects.

Thus in discussing pernicious anæmia he gives an account of its history. In 1855 Addison, of Guy's Hospital, first described a disease in which there was anæmia and pigmentation, which he called idiopathic anæmia. He did not distinguish between what we now know as Addison's disease and Addison's or pernicious anæmia. In 1872 Bremer described the disease and it is known in Germany as Bremer's disease. In 1876 Cohnheim instituted the hypothesis of megaloblastic degeneration of the bone marrow; he thought the megaloblasts were unable to produce ordinary red cells. In 1884 List described certain cases of anæmia with *tabes dorsalis*. These we now know to have been cases of pernicious anæmia with subacute combined degeneration of the cord. In 1891 Van Noorden wrote on the disease. In 1892 Ehrlich brought forward the theory that in pernicious anæmia there was a megaloblastic regeneration, not degeneration brought about by the increased demand for red cells. In 1900 William Hunter described inflammation of the tongue associated with anæmia, so-called Hunterian glossitis. In 1907 Florence Sabin described reticulocytes.

When the specimens of blood are prepared by vital staining methods, with brilliant cresyl blue, a chromatin network is seen in the red cells. Normally the reticulocytes represent about 1% of the red blood corpuscles in adults and 5% to 10% in infants.

[1] Read at a meeting of the Queensland Branch of the British Medical Association on June 7, 1929.

They are increased in anæmic conditions, especially in acholuric jaundice. The reticulocytes are young red cells and a graph showing their increase after the exhibition of liver extract in the treatment of pernicious anæmia is very interesting. There is a rapid rise after a few days and later a gradual fall to normal. A rise in the reticulocytes before a remission has been known for some years.

In 1918 Van den Bergh described his test for differentiating the two types of bilirubin in the blood. We now know that the bilirubin in the blood is increased in pernicious anæmia and that we may now say there is some degree of jaundice in this disease without being annihilated by examiners.

In 1925 Minot and Murphy described their successes in the treatment of pernicious anæmia with liver diet.

In 1927 Peabody described his method of trephining the long bones and removing bone marrow for examination. He found that the marrow was made up almost entirely of megaloblasts during the active phase of the disease and that even in remissions, when the patient's blood film appeared normal, there were still very definite changes in the marrow.

In the same year Plummer and Vincent described certain cases of pernicious anæmia in which the patients had difficulty in swallowing. This is thought by Hurst to be due to a condition similar to the Hunterian glossitis which has spread backwards to the nervous elements of Auerbach's plexus in the œsophagus. This is now known as the Plummer-Vincent-Hunt syndrome and is identical with achalasia of the œsophagus.

In 1850 Virchow claimed that extrahepatic bile formation did occur, as bile was seen in old exudates, hæmatomata and other collections of fluids. In 1886 Minskowski performed experiments by which he convinced himself and most other observers that all jaundice was hepatogenous. He injected arseniuretted hydrogen into a goose; this is a powerful hæmolytic poison. Much hæmolysis was produced, with liberation of a great quantity of hæmoglobin and jaundice ensued. He then extirpated the liver in another goose. This operation is not difficult in birds and he again injected the arseniuretted hydrogen. Hæmolysis again took place, but the hæmoglobin was excreted in the urine and no jaundice resulted. This Minskowski took to be evidence enough of the liver's monopoly in the production of bile.

The more recent view concerning jaundice is that the hæmoglobin of the effete red cells is dealt with by the reticulo-endothelial system. These cells are widely spread in the body, being represented by the Kupffer cells of the liver, the endothelial cells of the spleen, glands and bone marrow. These cells remove the iron from the hæmoglobin molecule and so produce bilirubin. Thus the liver has no power of producing bilirubin except by virtue of the Kupffer cells and the bilirubin produced by the other member of the reticulo-endothelial system is brought to the liver by the circulation and secreted by the liver cells into the bile.

McNee showed that Minskowski's experiment was wrongly interpreted and that jaundice is not produced in the goose whose liver has been removed, because in birds the greater part of the reticulo-endothelial system is present in the liver, the spleen being extremely small. When the hæmolysis took place, the remaining cells of the system were not numerous enough to cope with the large amount of hæmoglobin set free in the circulation and so this was excreted by the kidneys, unchanged. The relation of the Kupffer cells in the liver to the production of bile is beautifully shown in one of McNee's drawings.

In 1918 Van den Bergh described a very delicate test to prove the presence of bilirubin in the blood and also demonstrated the difference between the bilirubin in the blood and the bilirubin which had been excreted by the hepatic cells into the bile. Van den Bergh found that there was one part in a million of bilirubin in the blood of normal people and that it was not excreted into the urine until a concentration of one in 40,000 or 50,000 was reached. Jaundice is divided into obstructive, hæmolytic and toxic varieties.

Lead Poisoning.

I was particularly interested in the views held on lead poisoning. The association of nephritis and lead poisoning in children, as we see it, is apparently quite unknown in England. The incidence of plumbism is chiefly amongst potters who use lead glaze, and those making plates for electric accumulators. The Government sees that medical inspection of the lead workers is done periodically and the susceptible men are told to seek another occupation. All those with a blue line are not considered as suffering from lead poisoning. Women in England are prohibited from working with lead.

The absorption of lead and of calcium go hand in hand and the lead is deposited as a harmless tertiary phosphate with the calcium in the bones. Any condition which causes the mobilization of calcium, also causes the lead to go into solution in the form of a colloid, thus acute lead poisoning may be produced in a patient long after exposure to the lead by giving him potassium iodide. Milk has been given to the workers in lead factories for years. In experiments in which cats were poisoned by white lead dust, it was shown that they went down hill rapidly if they turned against their food. Both these facts show that when the stream of calcium to the bones is good, the lead is deposited in a non-toxic form.

The mobilization of lead from the resting place in the bone has been attempted by producing an artificial acidosis. Four to six grammes of ammonium chloride given in a large amount of water will cause ten times the usual amount of lead to be secreted in the fæces. Acute lead colic may be produced in this way also in a patient who had not been in contact with lead for years. If colic

should ensue, then eggs, milk and ice cream are recommended. In very acute cases of lead colic the pain can be stopped almost immediately by the intravenous administration of calcium chloride. One must be careful to inject it very slowly; the calcium ions may cause sudden cardiac asystole. Calcium is safer when given by the mouth.

At London Hospital also one may go round the wards with Lord Dawson of Penn, a more courtly or gentle man it would be difficult to imagine.

A clinical demonstration is held at Guy's Hospital once a week; here one has the pleasure of seeing demonstrations by Dr. Hurst, who is ably supported by Dr. Ryle and Dr. Symonds.

I have seen several patients with achalasia of the œsophagus demonstrated by Dr. Hurst. He considers that the condition is due to a lesion of the nervous mechanism, that there is an inflammation affecting the structure of Auerbach's plexus of the œsophagus which upsets the normal wave of peristalsis, leading to difficulty with swallowing and dilation of the œsophagus, with hypertrophy and a spasm of the cardia. Microscope slides were shown to demonstrate a round-celled infiltration of the plexus.

He treats these patients by means of the mercury tube, used as a bougie and gets cures in the majority. There is no organic stenosis and the spasm of the cardiac sphincter yields to the weight of the mercury tube.

The National Heart Hospital in Westmoreland Street is also a place of great interest. Here there are four large wards and a huge out-patient department which are entirely taken up with patients with heart affections. A special course of two weeks is held here several times during the year. Lectures and demonstrations are given by the staff. An interesting feature of the hospital is the wiring to every bed in the hospital from the electro-cardiograph which is situated in the basement. In this way electro-cardiograms are taken of every patient in the hospital without moving him from his bed. This also enables the result of treatment to be watched by means of electro-cardiographic tracings. Here electro-cardiograms can be seen showing the precise moment at which the irregularity of auricular fibrillation gave place to normal rhythm under the action of quinidine. One can also study tracings taken during attacks of *angina pectoris* and note their similarity to the electro-cardiogram taken at the moment of death.

Skiagrams are used extensively in elucidating clinical conditions. Dr. John Parkinson makes an orthodiagram in every instance. He manipulates the machine himself and in cases of mitral stenosis he gives a draught of bismuth meal to demonstrate the outline of the left auricle and to ascertain whether or not the posterior mediastinum and the œsophagus are being encroached upon.

Ordinary skiagrams do not give a true picture of the condition of the heart because of the distortion of the shadow. Two methods are used to overcome this. The first is by a powerful X ray tube, used at 2·1 metres (seven feet) from the patient; this causes the rays to be almost parallel and the shadow produced is a fair indication of the size of the heart. This method needs a very powerful and costly apparatus. The second method is simpler. An ordinary tube which is arranged to move easily in a plane parallel to the patient's chest, is employed. An iris diaphragm is used which is narrowed down to about 5·0 to 7·5 centimetres (two to three inches) in diameter and the outline of the chest and heart and great vessels is drawn with an oil pencil on the fluorescent screen, this being later traced on a piece of butter paper. Butter paper is much cheaper than X ray films.

Courses are held during the summer at the Brompton Hospital for Diseases of the Chest. This hospital is devoted entirely to pulmonary conditions, tuberculosis being by far the commonest condition treated. A sanatorium at Frimley is run in conjunction with the hospital. Their method of dealing with sufferers from pulmonary tuberculosis is according to the national tuberculosis scheme and works very well. Briefly it may be outlined as follows:

The patient first consults his private doctor, who sends him on to the tuberculosis dispensary. Here he is examined by a physician who is skilled in this work, and is dealt with according to his condition. Those with advanced lesions are sent to a special home. Those who are not so bad and for whom there is a chance to do something, are sent to a hospital for chest affections, such as Brompton Chest Hospital. Young patients without much toxæmia are sent to a sanatorium. Others may be referred back to the private doctor. Those in the Chest Hospital may pass to the home for advanced lesions or be sent on to the sanatorium when their toxæmia is controlled or in slight infections may be referred back to their own doctor.

On leaving the sanatorium the patient is referred back to his own doctor. In this way the sufferers are constantly watched and the best treatment for the stage of the disease which is present, has a better chance of being applied.

The actual treatment of pulmonary tuberculosis differs slightly according to the treating physician. For instance, Dr. Batty Shaw advises artificial pneumothorax in almost every instance and is not adverse to causing partial collapse of both lungs in bilateral disease, so that in some patients neither a breath sound nor a heart sound can be heard.

Most of the physicians commence by giving the patient complete rest. What is meant by "complete rest" is, I believe, known only to the ward sister at Brompton Hospital. If their patient does not respond to this treatment and the patient is suitable, artificial pneumothorax is induced.

In France a moderate amount of collapse is induced on both sides in fairly advanced infections and the patient is nursed like an enteric fever patient with absolute rest; they are not allowed to stir a finger. Some patients are treated with

"Sanocrysin," with or without artificial pneumothorax.

Within the last few years the operation of thoracoplasty has been gaining favour as a method of treatment in many instances. Especially is it used for chronic pyo-pneumothorax when large cavities which will not collapse with pneumothorax and for patients who have developed adhesions after many punctures for pneumothorax induction. Phrenic avulsion is frequently done as a preliminary.

Mr. Tudor Edwards is the chief exponent of phrenic avulsion and thoracoplasty and has very set ideas in regard to the treatment of non-tuberculous conditions also. In cases of empyema he does not consider operation unless the pus has become thick. He always aspirates and considers that this gives much better results than early drainage operations. If an operation is done too early before there are any adhesions, there is no fixation of the mediastinum and severe shock, known as "mediastinal flutter," is produced. Edwards recommends local anæsthesia and a vertical incision. This enables parts of two ribs to be removed if necessary and prevents pus from collecting in the lower lip of the wound. Even when aspiration is done, the incision may be made down to the rib and the wound packed with gauze. Aspiration is thus done painlessly every forty-eight hours until the pus gets thick, when a piece of rib may be removed and a flanged tube inserted. Twice a day the chest is flushed out with "Eusol" which is retained for twelve to fifteen minutes.

One must make sure that a bronchial fistula is not present by introducing a small quantity of the "Eusol" and tilting the patient. If no coughing occurs, it is generally safe to continue with the flushing. The tube is left in until a skiagram reveals the visceral and parietal layers to be in contact.

In chronic empyema the operation of decortication can sometimes be done and the thickened layer of fibrin can be stripped off the lung which will readily expand. But this happy result at times cannot be obtained and the chest wall has to be made to collapse on to the contracted lung by means of a thoracoplasty operation.

Edwards does the posterior paravertebral operation and removes that part of the rib between the angle and the vertebral column in two to three ribs above and below the cavity which it is desired to collapse. Sometimes the first to the tenth ribs must be removed, usually in a two or three stage operation.

In unilateral bronchiectasis a phrenic avulsion is now widely practised and meets with success in many instances, especially when done early.

In later cases a thoracoplasty operation is recommended and in most severe cases when the lesion is localized to a lower lobe, the operation of lobectomy is performed. This is very severe and has a very high mortality.

My paper would not be complete without reference to the fine neurological work which is done at Queen's Square Hospital and at St. George's Hospital. Here one can get the answer to the frequently expressed statement in regard to patients with neurological affections: "But what can you do for them?"

Reports of Cases.

HÆMOPERICARDIUM.

By EDGAR H. M. STEPHEN, M.B., Ch.M. (Sydney),
Honorary Physician, Royal Alexandra Hospital for Children; Lecturer in Medical Diseases of Children, University of Sydney.

J.S., a boy, aged nine years, was admitted to the Royal Alexandra Hospital for Children on November 29, 1928. He was complaining of shortness of breath. This symptom appeared a fortnight prior to his admission and he was noticed to have become very pale. For a few days he had had a cough. There had been no swelling of ankles or feet. He had had no pain.

His parents stated the only record of any departure from normal health was a report they had received from a school medical officer which was remembered vaguely as stating that he had something wrong with his heart and should take more exercise. The family is foreign and the report did not disturb them. The son also showed an unruffled placidity when he walked into the admission office with a pulse of 132 to the minute. Though swarthy of complexion, his pallor was unmistakable. He sweated and looked ill. His temperature was 37·1° C. (96·8° F.) and his respirations numbered 40. Examination of the urine revealed a trace of albumin. The heart apex beat was diffuse and situated 2·5 centimetres (one inch) outside the nipple line in the fourth and fifth intercostal spaces. The heart dulness extended 2·5 centimetres to the right of the sternum, to the anterior axillary line on the left and up to the *manubrium sterni*. The heart sounds were poor in quality and noted as of a peculiar "chirping" character. The abdomen looked large and full due mainly to the position of the liver which was displaced downwards and reached the umbilicus.

There were dulness with diminished breath sounds in the left axilla, dulness at the left base with bronchial breathing and bronchophony (Ewart's sign) and some fine râles. There was harsh breathing at the left apex. He had hypertrophied tonsils and enlarged submaxillary glands. A radiogram was taken and Dr. Sear reported the presence of an enormous cardiac shadow the appearance of which suggested pericardial effusion. The leucocyte count was 11,600 per cubic millimetre. The von Pirquet skin test gave no reaction. *Paracentesis pericardii* was performed in the chondro-xiphoid angle and about forty cubic centimetres of blood were withdrawn with the appearance of venous blood. Paracentesis was repeated on December 12, 1928, and ninety cubic centimetres of blood obtained. On this occasion the needle was inserted 1·25 centimetres (half an inch) to the left of the apex beat. A radiogram dated January 3, 1929, showed a great decrease in the cardiac shadow. On January 15, 1929, auscultation of the heart revealed a blurring of the first mitral and a reduplication of the second sound in this area. The pulse varied between 80 to 100 per minute.

On January 17, 1929, seven weeks after his admission, his parents took him home to continue his rest in bed. He was looking well and feeling very comfortable. The pathologist reported the specimens of blood as indistinguishable from normal venous blood. It was sterile and did not affect a guinea-pig into which some was injected. The Wassermann test has been carried out and no reaction obtained.

The causation of the condition is uncertain. The rupture of a pericarditic adhesion has been reported as a cause. A case recorded in THE MEDICAL JOURNAL OF AUSTRALIA

was due to a foreign body. No history of trauma could be elicited, the boy's description of his playtime being of a surprisingly uneventful nature. His home life was apparently of the quietest and not marred for him by toil or effort.

EXTRADURAL ABSCESS.[1]

By ERIC SUSMAN, M.B., Ch.M. (Sydney), M.R.C.P. (London),

Assistant Physician, Royal Prince Alfred Hospital, Sydney.

Clinical History.

R.S., A MALE, *ætatis* twenty years, came under observation for frontal headaches, increasing in severity and frequency, for the past four months. Other symptoms were vomiting which was unrelated to the taking of food and occasional unprovoked outbursts of temper. Six years ago the patient had suffered from osteomyelitis of his right tibia for which he had been operated upon, apparently making a complete recovery. During the last three years he had suffered from boils in various parts of the body. He had never had any ear trouble.

On examination the patient was a pale young man with scars on the right leg and a discharging sinus. There was blurring of the temporal margins of both discs with slight congestion of the retinal veins. Beyond this there was not a single abnormal neurological sign. The pulse was strong, its rate 72 per minute and the blood pressure was within normal limits. There was no fever.

The patient was forthwith admitted to hospital for further and continuous observation with the provisional diagnosis of cerebral abscess. The scalp was shaved. A culture of the blood was sterile after seventy-two hours' incubation. A radiological examination of the skull revealed no abnormality. Three days after admission he developed a soft, fluctuant, tender tumour over the highest point of the cranium. This was regarded as a Pott's puffy tumour. The general condition of the patient was good, but there was now slight fever. The tumour of the scalp increased from day to day and on the eighth day after admission it was explored by Mr. B. T. Edye. At operation he evacuated three hundred cubic centimetres (ten ounces) of thick yellow pus by incising the scalp. The parietal bones were denuded of periosteum. The surgeon then made a trepine hole on each side of the superior longitudinal sinus and evacuated two hundred and forty cubic centimetres (eight ounces) of similar pus which was lying in the extradural space.

Bacteriological examination of the pus revealed that the infection was due to *Staphylococcus aureus*. The patient made a good recovery. So far, he gives no signs of sowing any more metastatic wild oats.

Comment.

This case illustrates the following points:

1. The insidious, grave and long delayed sequels that may follow osteomyelitis.
2. The supreme importance of the routine examination of the optic discs in the investigation of every case of headache. This may be the single determining physical sign that a gross intracranial lesion does in fact exist. This was so in the present instance.
3. The shrewd dictum, laid down by the late Sir William Gowers more than half a century ago, of never giving an opinion on an apparently unlocalizable intracranial lesion without a careful examination of the shaven scalp.
4. In spite of the long history of the case (four months), the large size of the abscess cavity and the obvious osteomyelitis of the skull at operation, the radiological evidence was of no assistance even after repeated examination.
5. The solution of the focalizing problem in the case by the development under vision of that uncommon lesion, a Pott's puffy tumour. This happy event is always a veritable Godsend to both physician and patient.

[1] This patient was shown at a meeting of the New South Wales Branch of the British Medical Association on May 16, 1929.

Acknowledgement.

I have to thank my senior colleague, Mr. B. T. Edye, for performing a life-saving operation on this patient.

Reviews.

PREVENTIVE MEDICINE.

WHAT Gray's "Anatomy" was and still with Cunningham's is to the medical student in his second and third year, Parkes and Kenwood's "Hygiene and Public Health" is in his penultimate or last year.[1]

Text books, and their name is legion, bid for the patronage of the students and young medical practitioners. Some books are still-born, some live but a little while. Of those that have reached their majority, have stood the test of generation after generation of students and are being read by the sons of fathers who studied earlier editions, this book by Parkes and Kenwood can indeed claim to be the standard. The fact that the book is on the library shelf in the consulting room of most practitioners, an ever ready reference to one curious as to an incubation period, whilst there must be few, if any, in the public health service who have not conned its pages, is some warranty.

The present eighth edition, in keeping with each edition subsequent to the first of which Louis C. Parkes was the sole author, is bigger. Preventive medicine of later years has become widened in its scope, thus requiring more space to include the results of recent research.

Although wisely the old name is retained in the title, Dr. Harold Kerr, the Medical Officer of Health of Newcastle-on-Tyne and Professor of Hygiene in Durham University, replaced Dr. Parkes in the preparation of the present work.

From cover to cover the book is brimful of information, a veritable compendium of knowledge on water, air, warming and lighting, climate, food, infection, disinfection and vital statistics.

The chapters on school hygiene, maternity and child welfare, industrial and marine hygiene necessitating an increase in size, have materially added to the usefulness of the book. In future editions we would suggest that a special chapter be given to insect vectors of disease, as the subject is now so extensive and of so much importance, especially in the overseas dominions.

One of the features of this work is that it is devoid of padding. There is no attempt at fine writing. As an egg is full of meat, so this text book is full of facts useful not only to the student preparing for an examination, but to all interested in the study of preventive medicine.

HISTOLOGICAL EXAMINATION OF NERVOUS TISSUES.

THE pathological examination of many interesting neurological specimens is too often neglected because a special technique may be required. At times even workers in special laboratories may find that accounts of particular methods can be read only in foreign journals, unobtainable monographs or sandwiched between hundreds of similar procedures in large manuals.

In "How to Stain the Nervous System"[2] Mr. Anderson has supplied a real need, because in his short book he brings forward in a manner both clear and terse nearly all the technical methods necessary for revealing nervous lesions as described in modern literature. The methods have the further advantage of having been tried and found both practical and constant in the laboratory of the National Hospital, Queen's Square.

[1] "Hygiene and Public Health (Parkes and Kenwood)," Eighth Edition, Revised by Henry R. Kenwood, C.M.G., M.B., F.R.S. (Edin.), D.P.H. (London), and Harold Kerr, O.B.E., M.A. (Dunelm), M.D. (Edin.), D.P.H. (Cambridge); 1929. London: H. K. Lewis and Company, Limited. Demy 8vo., pp. 835, with illustrations. Price: 21s. net.

[2] "How to Stain the Nervous System: A Laboratory Handbook for Students and Technicians," by J. Anderson, with an Introduction by J. G. Greenfield, B.Sc., M.D., F.R.C.P.; 1929. Edinburgh: E. and S. Livingstone. Crown 8vo., pp. 138. Price: 5s net.

We sympathize with his plaint to his clients who in their eagerness to find lesions "cut the brain up while yet fresh and soft and leave it a shapeless mass without orientation." He describes a simple device for slicing the brain evenly after fixing.

The technique of fixing and embedding brains and cords in celloidin and cutting, staining and mounting serial sections is adequately dealt with, as well as such staining methods as are applicable to paraffin sections of the nervous system. He uses a low temperature paraffin-xylol mixture after cedar wood oil to avoid shrinkage and mounts delicately stained (Nissl) sections in cedar oil. A useful chapter on "frozen" sections includes the use of celloidin as a reinforcing medium. Sections for Weigert's myelin stain are thoroughly mordanted; too often the essential chrome salt is washed out (Wise) and the care needed when differentiating and clearing neuroglia and Nissl sections is noted. Ford Robertson maintained that this meant a thorough dehydration, an ideal he sought to obtain by using warm turpentine *plus* a trace of the Venice variety.

The simpler of the new silver methods of Da Fano and Hortega are included and this useful text book ends with a chapter on staining fat, calcium and iron in tissues, an appendix of the formulæ of reagents used and an index.

A TEXT BOOK ON INFECTIOUS DISEASES.

TWENTY-FOUR years ago the first edition of "Acute Infectious Diseases" was brought out by the late Dr. William M. Welch and Dr. Jay Schamberg, both of the Philadelphia Hospital for Contagious Dieases. In the second edition which has now appeared, Dr. Schamberg has as collaborator Dr. John Kolmer, the eminent bacteriologist and pathologist.[1] Both have already various works to their credit, Schamberg's "Diseases of the Skin" being as well known as Kolmer's writings on immunity and specific therapy. Perhaps it is for this reason that the present joint production fails to satisfy. Many of the admirable illustrations have been reproduced from Schamberg's book referred to above; his descriptions of the various skin eruptions are as authoritative, as full and as accurate as ever. The bacteriological and immunological sides of the subject, as presented here by Dr. Kolmer, are well put and interesting and surprisingly up to date considering the large size of the volume. But for the most part the authors have been content to let the main clinical portions of the book remain as they were on their first publication. The majority of the statistical tables relates to periods of last century and some of the most important are hopelessly out of date, as for instance those concerning diphtheria and scarlet fever. The chapter on the pathology of diphtheria contains innumerable references; not one of these could be found less than a quarter of a century old. Mention is repeatedly made of "recent" work on various subjects; in some instances both the workers and the work have been dead for many years. To put it bluntly, a thorough revision is necessary of all the sections of the work save those dealing with the specialties of the two authors. These last are treated admirably.

And yet on reading page after page is met with containing some little phrase or statement which is encountered with delight, which harmonizes with the reader's experience and is not mentioned in any other text book. The first impression that the authors have of late years had little actual clinical experience in these diseases, is thereby modified, but the sense of exasperation remains.

The opening chapters, comprising three hundred pages, are devoted to small pox and vaccinia, which are dealt with exhaustively and illustrated by many fine plates. Very brief mention is made of post-vaccinal encephalitis.

After small pox naturally most space is given to diphtheria and scarlet fever. Most interesting are the portions dealing with the newer knowledge of these diseases, which presumably are the work of Dr. Kolmer. They are thoroughly and carefully written and highly stimulating, though the author is optimistic in his hope that "diphtheria may well be an almost negligible factor in the mortality rates of 1930." He rightly adopts a conservative attitude regarding the various bacteriological causes of measles that have been announced. The methods of prevention of these three diseases are discussed fully and in the case of diphtheria a separate chapter is given to the subject.

In addition to chapters on typhus, chicken pox and rubella which were included in the earlier edition, accounts are added of a number of other common affections, though enteric fever and allied conditions are still omitted. The most important of the new chapters are those concerned with whooping cough, erysipelas and cerebro-spinal meningitis. For the prophylaxis and treatment of the first named disease vaccines in enormous doses are recommended. Otherwise this chapter is on conventional lines. The thirty-five pages on cerebro-spinal meningitis are very fine indeed—a splendid piece of work. The clinical phases of erysipelas are well described, as is to be expected from the senior author's extensive experience of the disease, but its bacteriology and particularly its relationship to that of scarlet fever could have been treated more fully.

For reasons indicated the book is hardly to be recommended to the student or the general practitioner, but for those who have already an acquaintance with the subject and can sift the grain from the chaff, it will be of very great value. The appearance of a properly revised edition will be awaited with interest.

[1] "Acute Infectious Diseases," by Jay Frank Schamberg, A.B., M.D., and John A. Kolmer, M.Sc., M.D., Dr.P.H., D.Sc., LL.D.; Second Edition, Thoroughly Revised; 1928. Philadelphia: Lea and Febiger. Royal 8vo., pp. 900, with illustrations. Price: $10.00 net.

PROGRESS IN OPHTHALMOLOGY.

THE ophthalmological section of "The Eye, Ear, Nose and Throat," "The Practical Medicine Series," 1928, contains matter well worthy of attention. Dr. C. L. Mix is the general editor of the series and Dr. C. P. Small edits the ophthalmic portion. The purpose of the volume is to review the past year's progress in eye, ear, nose and throat diseases.

In an introduction dealing with the relation of the ophthalmologist to the general medical profession, the editor points out that too many practitioners merely look to the eye specialist for certain data, not wanting or even resenting his views in regard to ætiology. He instances types of cases in which an ophthalmologist's opinions, as apart from his findings, are likely to be useful.

The value of what are termed health examinations of the eyes is discussed at some length, the idea being that the health and activity of a person's vital functions can be more accurately estimated by a thorough ocular examination than by almost any other means.

A most important discussion concerns the subject of refraction in the very young, with especial reference to strabismus and the early age at which treatment must begin if it is to be effective. The proposal to treat convergent strabismus in hypermetropic children with a certain type of bifocal lens is an important contribution to this most difficult problem.

Glaucoma and its non-operative treatment are comprehensively considered and rules are suggested to help in choosing operation or miotics as the line of treatment.

Protein therapy, specific and non-specific, in relation to ocular disease and injury is well dealt with and the indications for various proteins are classified.

Other headings are: The eye and systemic conditions; new instruments and operations; the value of antiseptics in modern ophthalmic surgery; diabetes.

Altogether this is a stimulating and helpful edition of the series.

[1] "The Practical Medicine Series Comprising Eight Volumes of the Year's Progress in Medicine and Surgery": Under the General Editorial Charge of Charles L. Mix, A.M., M.D.; The Eye, Ear, Nose and Throat; 1928. Chicago: The Year Book Publishers. Crown 8vo., pp. 540, with illustrations.

The Medical Journal of Australia

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Travel Notes.

IN recent years it has become increasingly common for medical practitioners to travel to Europe and America and to visit the famous clinics, hospitals and post-graduate schools. The educational value of these journeys is immense to the medical practitioner himself and to those who entrust themselves to his care. He reaps a fine harvest in obtaining at first hand an insight into the methods, doctrines and idiosyncrasies of the leading teachers in the countries visited. He gains a wide experience by seeing large numbers of patients suffering from divers diseases and by having an opportunity of observing the effects of forms of treatment different from those with which he is familiar. He is able to correct any erroneous impression he may have formed concerning the views and practice of recognized authorities. He becomes cosmopolitan instead of provincial both in regard to professional matters and in regard to his general outlook on life. It is quite natural that when a man returns from a journey of such importance to himself, his enthusiasm should impel him to relate his experiences to others. He is inclined to forget that in these days of rapid and easy travel he is not alone in having gained this valuable experience. But even if the majority of his audience has not wandered beyond the Commonwealth, he has little or nothing to relate that has not already been offered to the whole profession in the writings of the masters he has visited. While he has gained a first hand acquaintance of the men and the matters on which he is inclined to discourse, all that he can give his audience is a second hand impression. His audience will continue to read what the authorities write in lectures, articles and addresses. If what he has heard and repeats differs from the statements contained in published records, it would be inadvisable to accept the former, because the visitor may have misunderstood or the remark may have been made as a suggestion in conversation and not as a deliberate utterance.

The practitioner on his return from a world tour can give his friends and acquaintances information of interest and may be able to influence some of them to emulate his example. The messages he has to give are more fitted for private or semi-private communication than for a formal meeting of medical practitioners. Many members of the profession have read papers on their experience during visits to other countries before meetings of the Branches of the British Medical Association and these papers reach THE MEDICAL JOURNAL OF AUSTRALIA in the ordinary way for publication. They are rarely of sufficient importance to justify their publication. We venture to hold the opinion that the members of the Branches would be more interested in listening to papers on some original work or on clinical observations of the readers. These remarks do not apply to those who go to England or some other country for post-graduate study and undertake original work while away.

There is a further reason why these papers should not be read at meetings of the Branches, save under exceptional circumstances. They advertise the fact that the readers have been abroad and have returned primed with the latest views on special subjects. It is not suggested that the papers are written and read for this purpose, but it is evident that they may convey the impression that the traveller wishes to tell the world that he has bought an expensive piece of equipment, experience.

Closely connected with this offering of second-hand knowledge is the habit not infrequently encountered of an author or speaker quoting extensively from English, American or continental authors. It is at times necessary to give a summary of the literature of the subject in an article and no conceivable objection can be taken to this. Again it may be of great value to quote views, doctrines and other statements of authors elsewhere, in order to substantiate or to correct the views already published. But nothing can be more tiresome or futile than to read the expression of opinion

of some prominent practitioner or the experience of some well-known clinic when that opinion or that experience is well known and has been enunciated in medical literature. Statements of fact can be given with chapter and verse without filling pages with quotations; the acceptance of an expression of opinion must depend on the soundness of the argument, not on the eminence of the author. In all circumstances plagiarism is objectionable.

The suggestion is made to the enterprising practitioner who sacrifices time, money and energy to add to his knowledge and experience by visiting hospitals and clinics in the United Kingdom, on the continent and in the United States of America, that instead of writing a paper on what he has seen and heard, he should use all his spare time in taking up the investigation of some subject concerning which the teaching elsewhere does not coincide with that in Australia. He will have seen men at work attacking a similar problem from their own point of view. He may have ascertained some difference in thought, some characteristic method of approach, some peculiar plan of campaign. From his wide experience he will be in a favourable position to put his newly acquired knowledge to good practical use and the result of his original investigations will certainly be valuable as a communication to the members of his Branch of the British Medical Association. His travel notes can be reserved for his family circle.

Current Comment.

THE LIVER AND THE PANCREAS IN TUBERCULOSIS.

IT is well known that in pulmonary tuberculosis it is not uncommon to find fatty infiltration of the liver on *post mortem* examination. The causes of this infiltration are not clear. It is pointed out that the deposition of fat in the liver is in pronounced contrast to the general emaciation and, although several explanations of the condition have been offered, none has been wholly acceptable. Changes have been noted in other abdominal organs and Otto Saphir[1] has recently noted an increase in the size of the islands of Langerhans in some instances and has endeavoured to correlate those with the changes in the liver. He has examined the liver and pancreas in one hundred bodies of persons who died of chronic ulcerative tuberculosis of the lung. He paid particular attention to the infiltration of the liver by fat, to changes in the interstitial tissue of the liver and pancreas and to the islands of Langerhans. In only three instances was complete fatty infiltration of the liver present. In four fat was found only in an area extending about half way from the periportal spaces towards the central vein, in twelve fat was found in the outer third of the lobules and in fifteen fat was present only in the liver cells surrounding the periportal spaces. In sixty-six instances no fat was found. There was no relationship between the external appearance of the body and the fat content of the liver. In twenty-seven livers there was a passive hyperæmia, but none of these contained fat. Saphir gives it as his opinion that tubercles were present in about 80% of the livers; he points out that it is impossible to examine the whole liver histologically. For this reason he accepts with caution his finding that in ten among fifty cases in which ulcerative lesions of the intestines were present, there were no tubercles in the liver. In sixty-seven of Saphir's cases there was a proliferation of connective tissue. In four instances the proliferation was advanced and in these a slight regeneration of liver cells and even a new formation of lobules were present—changes characteristic of the early states of Laennec's cirrhosis. No relationship was found between the proliferation of connective tissue and the presence of tubercles in the liver.

As far as the pancreas is concerned, Saphir refers to the general teaching that though the surrounding lymphatic glands may be involved in the tuberculosis, the pancreas contains no tubercles. In four of his cases he found tubercles in the pancreas, but observed no extension from the pancreas into the glands. In eleven of the one hundred cases there was a definite proliferation of connective tissue in the pancreas; two of these presented a picture of new formation of connective tissue encircling the lobe entirely combined with some manifestation of regeneration. There was no relationship discoverable between the fibrosis or sclerosis of the liver and of the pancreas. The islands of Langerhans seemed to be spared in the process. Special attention was paid to the size of the islands of Langerhans in view of Saphir's previous observation that in tuberculosis some of the islands were much larger in some instances. There were no signs of degeneration or of cellular infiltration. It was found, however, that the islands varied in diameter from 155 to 511 microns. None of the islets measured over 350 microns in those subjects in whom fat was present in the liver. In fourteen cases with fat and twenty-five without fat in the liver there were islets measuring from 300 to 349 microns in diameter. In the presence of complete infiltration of the liver with fat no islet of over 275 microns was

[1] *Archives of Pathology*, June, 1929.

found. Although he admits that it is questionable whether hypertrophy of the islands necessarily means an increase in function which would result in hypoglycæmia, Saphir suggests that it may depend on the size of the islands of Langerhans together with other factors whether the liver in pulmonary tuberculosis contains fat.

After absorption into the blood fat is transported to three places, the depôts for fat, the liver and the tissues. The depôts of fat are chiefly the subcutaneous and retroperitoneal tissues. Whenever the requirements of the body demand it, the depôt fat is carried to the liver where its energy "becomes unlocked, but not actually liberated." After transportation to the tissues the actual liberation of energy occurs. Depôt fat has been compared to wet gunpowder, it contains potential energy and is not in a suitable condition for explosion. The liver acts as the drying agent of the gunpowder, so that the tissues may be able to explode it. The liver has the power of desaturating fat. The desaturated fatty acid is more liable to break up than the saturated fatty acid. It has also been supposed that the liver may take part in the building of fatty acid radicles into the complex molecules of lecithin. In the fatty livers of tuberculous subjects there has been some interference with the normal process. It is not a constant finding in all tuberculous infections. It is described as an infiltration. An infiltration may be regarded as a condition in which the fat normally present in an organ, is increased and in which there is no demonstrable damage to the parenchyma of the cells of the organ. In fatty degeneration there is some damage to the cell protoplasm. According to Virchow's original view the change consists in the formation of fatty globules from the cell protoplasm. This view is not regarded as tenable. There is no evidence that fats are produced from the proteins of the body and experiments on animals poisoned by phosphorus have failed to reveal any increase in the total amount of fat in the body. Rosenfeld has shown that fatty degeneration is of two main types. That of phosphorus poisoning may be taken as exemplifying one type. Rosenfeld showed that the fat was not produced from the liver cells, but that the condition represented an infiltration of the damaged cells with fat carried by the blood from the adipose tissue. The second type of fatty degeneration may be seen in the kidneys in phosphorus poisoning. Here the total amount of fat in the organ is not increased, though a large proportion has become visible in the form of globules. This is explained by the existence of fat in normal tissues in combination with proteins as masked fat; in fatty degeneration the protoplasm is damaged and the fat is set free. The important point is that in fatty degeneration cellular damage has occurred. The condition described by Saphir in the liver and pancreas is most interesting. There was a certain amount of fibrosis in many instances. In a few specimens this fibrosis had advanced to such a degree that "regeneration" was found. In the liver there was a slight proliferation of young bile ducts and a new formation of blood capillaries was noted. There was also a slight regeneration of liver cells and there was even a new formation of liver lobules. In the pancreas similarly in two of the specimens which manifested proliferation of connective tissue, there was evidence of "regeneration." For regeneration to occur there must have been some previous degeneration. The degeneration was not productive of gross damage, for no signs of damage were found. It must be concluded, however, that damage had occurred. It may safely be concluded, then, that the process at work in the liver and pancreas was of the same nature, in spite of Saphir's finding that there was no discoverable relationship between the fibrosis in the liver and that of the pancreas. The cells of both organs probably were damaged. The organs examined by Saphir were taken from the bodies of persons whose tuberculous infections had been chronic. There is nothing to show how long the infections had lasted in any particular instance. In these circumstances it may be presumed that the more chronic infections were those which produced the most pronounced fibrosis and the evidence of regeneration of hepatic or pancreatic cells. In other words, the process affecting the liver and pancreas was a progressive one.

Saphir's observations on the size of the islands of Langerhans are interesting. He is careful to point out that a small diameter may indicate small segments of islands and that on the other hand a large diameter may indicate large islands. His finding in regard to the size of the islands may be summarized by the statement that there was no fat in the liver in the presence of large islands and that complete "infiltration" of the liver was found with small islets. As far as the size of the islands is concerned, it is well known that there is considerable variation. It is known also that the pancreas has an influence on the fat metabolism. For example, in lipæmia there is a lack of balance between the inflow and outflow of blood fat. In diabetes the utilization (outflow) of fat is deficient and fat accumulates in the blood. It is necessary to determine whether increase in size of islands means an increase in their function. The question may be raised as to whether increase in size is not in part due to the disease from which the person is suffering, or to some other factor. If the largeness of the islands be due to the disease process, it would be necessary to postulate an increased function to help in explaining the absence of liver fat associated with the largeness. On the other hand, fat present in a liver is associated, according to Saphir, with small islands. The only possible conclusion is that the enlargement of the islands is fortuitous. As a matter of fact knowledge of the part played by individual parts of the digestive apparatus and of their hormonal control is limited. Investigations such as those of Saphir, if combined with biochemical research, may bring about useful additions to knowledge.

Abstracts from Current Medical Literature.

PHYSIOLOGY.

Gastric Digestion in the Absence of Pancreatic Juice.

THE exclusion of pancreatic juice from the intestines either by ligation of pancreatic ducts or pancreatectomy might affect the gastric digestion for several reasons. Introduction of dilute acid into the upper part of the intestine has been shown to stimulate gastric secretion. Since in normal digestion the acid chyme is neutralized in part by the pancreatic juice, the exclusion of the latter should lead to a more prolonged action of the acid chyme and lead to a hypernormal secretion of gastric juice. It is commonly taught that acid chyme in the duodenum leads to an increase in the tone of the pyloric sphincter which continues until the acid chyme is neutralized. Since the pancreatic juice plays an important rôle in neutralizing the acid chyme, its exclusion according to this teaching should lead to a hypernormal tonus of the pyloric sphincter. G. B. Fauley and A. C. Ivy (*American Journal of Physiology*, July, 1929) have studied in dogs the effects of ligation of the pancreatic ducts and of pancreatectomy on gastric digestion. Ligation of the pancreatic ducts in dogs with Pavlov pouches resulted in a temporary decrease in gastric secretion for a few days followed in most cases by a hypernormal secretion which persisted as long as six months. Alkalis increased the secretion in two dogs and had no effect in two others. The emptying time of the stomach was decreased by ligation of the pancreatic ducts, but more so by total pancreatectomy. It is believed that hunger or polyphagia is the factor principally concerned in the causation of this decrease. The decrease in emptying time of the stomach following ligation of the pancreatic ducts or pancreatectomy shows conclusively that acidity of the duodenum as a controlling factor of the rate of emptying of the stomach is very minor in importance.

Protein Intake of Medical Students.

INVESTIGATIONS during recent years have suggested that the amount of protein ingested might be related to the external temperature. F. P. Brooks (*American Journal of Physiology*, July, 1929) has determined the protein intake from the urinary output of nitrogen of medical students living at various temperatures. One hundred and ninety-two students have been examined. The average nitrogen excretion in the urine was 10·34 grammes which corresponds with a protein consumption of 71·3 grammes per 70 kilograms of body weight after adding 10% for protein lost in the fæces. The protein consumption of students living at a mean temperature of 5·0° to 6·9° C. was approximately the same as found for students living at temperatures of 13·05° to 26·77° C. and −4·4° to −1·0° C.. Hence protein habits within this range of climates and in this occupation are little affected by change of temperature. The protein consumption of this class of individuals is far below the accepted dietary standards, which supports the view of Chittenden that 60 grammes of protein per 70 kilograms of body weight were ample to include in the diet.

Cardiac Output Determinations.

DURING the past few years several methods have been devised for determining the output of the heart in man. These have all suffered from certain defects. A new method depending on quite a different principle from other methods has been devised by J. W. Moore, J. M. Kinsman, W. F. Hamilton and R. G. Spurling (*American Journal of Physiology*, July, 1929). A known amount of an easily detectable substance (phenol-tetroid-phthalein sodium Mallinkrodt) is injected quickly into a vein. At a convenient point in the arterial system a puncture is made and consecutive blood samples are collected. The quantity of substance that has been injected and the concentration in the various samples together with the time occupied by the first circulation being known, the cardiac output per minute is determined. To test the accuracy of the method two courses of investigation were chosen. The first was a checking with a mechanical apparatus where the actual outflow could be measured. This gave an average error for the method of 3·2%. The second method was to compare the cardiac output as determined by the new method on dogs with the results obtained by the use of the Fick method on the same dogs. The average difference between the two methods was only 0·2%. A few experiments were done on man. Two hundred and fifty to five hundred milligrammes of the dye in two cubic centimetres of distilled water were injected into the median basilic vein of an upraised arm. Samples were taken from the femoral artery with the subject on his side at the edge of a stretcher.

Effect of Ingestion of Food on Cardiac Output.

A. GROLLMAN (*American Journal of Physiology*, July, 1929) has investigated the effect of the ingestion of food on the cardiac output, the pulse rate, blood pressure and oxygen consumption on six subjects. After the ingestion of food the pulse rate rises, but falls within a short time to the resting value. The systolic blood pressure usually rises somewhat while the diastolic pressure remains constant or falls slightly. The cardiac output rises immediately after the ingestion of food, reaches a maximum of 0·5 to 2·0 litres over the fasting level and remains at this high and practically constant level for one to three hours. Four or five hours after the ingestion of a light meal the cardiac output has returned to its fasting level. The cardiac output had reached its maximum value before the oxygen consumption had reached its maximum value. The arterio-venous oxygen difference dropped immediately after the ingestion of food and then gradually rose throughout the remainder of the experiment. It reached its fasting level before the oxygen consumption had returned to its basal value.

Physiology After Exclusion of Sympathetic Impulses.

THE importance of the sympathetic nervous system to the animal economy has been the subject of much observation. W. B. Cannon, H. F. Newton, E. M. Bright, V. Menkin and R. M. Moore (*American Journal of Physiology*, June, 1929) have determined the effect of removal of both sympathetic chains from the superior cervical to the pelvic ganglia. In one series the sympathetic chain was removed in parts, corresponding roughly to the neck, chest and abdomen, at different operations. Later a technique was devised for the complete removal of the sympathetic chain in one piece from the stellate ganglion to the pelvic ganglia, first on one side, later on the other. Cats, dogs and monkeys have been operated on in this way and in all cases the animals have lived for months in apparently normal fashion. In general the authors infer from the experiments that no part of the sympathetic system is essential to life. Additional removal of one adrenal and demedullation of the other demonstrated that the chromophile tissue is not of vital importance. Even when the adrenals were left intact and the thoracic and abdominal sympathetic ganglia removed, not enough adrenalin was secreted during excitement and vigorous struggle to cause any noteworthy acceleration of the denervated heart. No more exacting test than this could be applied, for the cat heart is sensitive to adrenalin in the dilution of one part in 1,400,000,000 parts of blood. Another cat had the sympathetic strands of both sides removed from the superior cervical to the pelvic ganglia, about two-thirds of the posterior lobe of the hypophysis extirpated, the semilunar ganglion dissected out, the right adrenal removed and the medulla of the left adrenal sucked and scraped away. The cat remained in the laboratory for eleven months thereafter, in excellent condition and performing his obvious functions like a normal cat. The animal was killed for examination and no trace of sympathetic was found nor was any chromophile tissue to be detected. Unilateral sympathectomy of young kittens has not resulted, as they have grown to adult size, in any demonstrable difference in bilaterally symmetrical organs. Sympathectomy does not prevent the female from performing the functions of reproduction and lactation. After bilateral sympathectomy emotional excitement causes no erection of hairs, no consistent increase of blood

sugar, no polycythæmia, no relative increase of mononuclear cells and no definite rise of blood pressure. Animals whose sympathetic system has been removed, are very sensitive to cold; having lost the power of conserving heat, they seek warm places and when placed in a frigid environment they lose heat more rapidly than normal animals. The basal metabolism usually falls somewhat after sympathectomy, especially after the cervical portion is excised. The hypothetical "vagotonic" and "sympathicotonic" states and "autonomic imbalance" are discussed. It is shown that when conditions are actually produced in the body that would most effectively induce "vagotonia" and "autonomic imbalance," the phenomena attributed to that state are local, slight and temporary. The slight effect resulting from sympathectomy raises the question as to the function of the sympathetic. The conclusion is drawn that this system, dispensable in the protected conditions of the laboratory, finds its great service at times of critical emergencies when it adjusts the internal organs of the body for use of the mechanisms responding to external exigencies.

BIOLOGICAL CHEMISTRY.

The Origin of Urinary Ammonia.

STANLEY R. BENEDICT AND THOMAS P. NASH, Junior (*Journal of Biological Chemistry*, June, 1929) discuss the recent literature on the origin of urinary ammonia. The work of Bliss is strongly criticized. The authors believe that the experimental data reported up to the present warrant the conclusions that urinary ammonia is formed by the kidney, urea is probably the precursor of the ammonia found in the urine, ammonia plays no part in neutralization of acids transported by the blood. They state that satisfactory evidence is lacking that ammonia is utilized for the intracellular neutralization of acids within the organism.

The Structure and Composition of Hæmosiderin.

SHERBOURNE F. COOK (*Journal of Biological Chemistry*, June, 1929) has reported a series of experiments which are held to confirm the view that in hæmosiderin the iron is inorganically bound. The technique used is fully described. The material chosen for the experiments was horse spleen because of its high hæmosiderin content. Preliminary analyses showed that the hæmosiderin and iron content run parallel and tests carried out under the microscope demonstrated that hæmosiderin consists of an iron compound which can be removed from the granules by treatment with acid, leaving the substrate practically intact. The granules were obtained free from tissue by a process involving digestion with alkali. The iron-containing substance was extracted and observed *in vitro*. It was found to react with thiocyanate and other substances in a manner not characteristic of ionic iron and was found on analysis to contain only iron, hydrogen and oxygen. Evidence produced favours the opinion that this substance exists as a colloid. A pure ferric oxide solution reacted with thiocyanate and other substances in approximately the same manner as the extract of hæmosiderin and the author concludes that hæmosiderin consists of organic granules impregnated with some form of ferric oxide.

Glucose Tolerance and the Blood Sugar Curve in Childhood.

MARY GILCHRIST (*Archives of Disease in Childhood*, June, 1929) discusses much of the recent literature on glucose tolerance and records the results of the glucose tolerance test in thirty-nine children, varying from one and a half to twelve years of age. In twenty-eight of these there was no reason for suspecting disturbance of carbohydrate metabolism, but in eleven such a disturbance might have existed. In the normal children the sugar tolerance was found to be very variable. In most cases glycosuria could not be produced by any amount of glucose which could be ingested and absorbed without sickness, but on one occasion the tolerance was broken by a quantity as low as one gramme per kilogram of body weight. As much as eleven grammes of glucose per kilogram of body weight were taken without glycosuria intervening. The renal threshold in children was found to be very variable, but to lie somewhere in the region of 0·23% in the majority of instances. In children given amounts of glucose equal to one gramme per kilogram of body weight, the blood sugar curve is similar to that found in adults. With larger quantities of glucose the curve is in the majority of instances at a much higher level and the fall is delayed beyond two hours. In disturbances of the endocrine system and in children showing any special lack of growth no clear-cut conclusions as to the finding of either a decreased or an increased sugar tolerance could be drawn.

Blood Fat in Cœliac Disease.

ALAN MONCRIEFF AND W. W. PAYNE (*Archives of Disease in Childhood*, October, 1928) suggest as a working hypothesis for further investigation the view that the primary fault in cœliac disease is not a defect in the absorption of fat, but a defect in the utilization of fat, analogous to the disturbance of sugar metabolism in diabetes. In support of this hypothesis these workers have estimated the fatty acid in the blood of a number of patients suffering from cœliac disease and also in a number of controls. In all the patients with cœliac disease the fatty acids were greatly increased. They refer to the difficulties in the technique of these examinations, especially those met with in children. The literature of this disease is reviewed and attention is directed to the similarity of the stools in cœliac disease and tuberculous conditions.

The Fæces of Rhachitic Children.

THIRZA REDMAN (*The Biochemical Journal*, Volume XXIII, Number 2, 1929) continues her work on the fæces of rhachitic children. She has investigated the hydrogen ion concentration of fresh samples of fæces and has estimated the calcium and phosphorus in the same samples when dried. The methods used for the determination of the calcium and phosphorus are fully described. The diet used for the children is given in detail. Curves were plotted to show the relationship between the hydrogen ion concentration and the percentage of calcium and phosphorus in the fæces at different periods of time under the same conditions of diet, but under different treatments until healing of rickets was established. Her results suggest a certain degree of correlation between the hydrogen ion concentration and the percentage of calcium in the fæces of rhachitic children. The best clinical results were obtained with irradiated cholesterol and hydrogen ion concentration values were all below seven, indicating some confirmation of the work of Zucker and Matzner and of Bacharach and Jephcott on rhachitic rats. But the mince and chicken, given to the others, was omitted from the diet of these children and this may have had some effect. Among other children healing appeared to be more rapid when the percentage of phosphorus was consistently low.

Iron in Nutrition.

J. WADDELL, H. STEENBOCK AND E. B. HART (*The Journal of Biological Chemistry*, July, 1929) have investigated the cure of anæmia in the rat by large doses of iron. They have treated two groups of animals suffering from anæmia of nutritional origin. One group received ferric chloride which had been specially purified, and the second group received ferric chloride which had not been specially treated. In the first group of experiments the iron salt was treated with hydrogen sulphide to remove any copper which might be present. The animals which received the unpurified iron salt, manifested a pronounced increase in hæmoglobin, especially when large doses were given. The animals which received the purified salt, did not respond with increased hæmoglobin production and failed to increase in body weight. Most of these animals died within four to six weeks of the addition of iron to their diet. The authors believe that their results may explain some of the conflicting reports in regard to the effect of iron in curing or preventing various forms of experimental and clinical anæmia. They suggest that copper contamination may play a rôle in certain forms of human anæmia that respond to large doses of iron, especially anæmia of nutritional origin.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE QUEENSLAND BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the B.M.A. Building, Adelaide Street, Brisbane, on June 7, 1929, DR. MERVYN PATTERSON, the President, in the chair.

Post-Graduate Work.

DR. ELLIS MURPHY read a paper entitled: "Some Aspects of Post-Graduate Work in London" (see page 367). The paper was illustrated by lantern slides.

DR. N. MARKWELL thanked Dr. Murphy for his very interesting paper. It brought back many happy memories of several years spent in London and he was very interested in the points upon which Dr. Murphy had touched. He referred to the wiring from the wards to the electrocardiographic room. This system had been a success at the Westmoreland Street Hospital when Dr. Markwell was in London. Since that date the interpretation of the electrocardiogram had been very much extended. At the present day the only physical signs of definite value in the diagnosis of chronic myocardial damage were revealed in the electrocardiogram. In this connexion depression of the *S-T* interval was important. Undue capacitance in the recording instrument might produce this abnormality. The standard Cambridge instrument could be relied upon not to produce capacitance, but this could not be said of every electrocardiograph. The question was whether wiring to the wards produced capacitance. This question was of current interest in Brisbane, as the system of wiring to the wards might be carried out when the electrocardiograph was installed at the Brisbane Hospital. Dr. Markwell had already suggested inquiry from the honorary staff of the National Heart Hospital.

DR. MERVYN PATTERSON thanked Dr. Murphy. He referred to achalasia. He had seen a patient in the last ten days whom he had regarded as suffering from achalasia, but this view had not been supported by Dr. Clarke. The skiagram had indicated carcinoma. He asked about the treatment with a hydrostatic dilator, in which twenty-five to thirty feet of water pressure equalled three feet of mercury pressure and which was just an adaptation of the method used by Plummer at the Mayo Clinic. With the mercury tube it was perhaps difficult to get the tube through. Plummer, he thought, dilated 3·75 centimetres (one and a half inches) in his treatment. The theory accepted was that the condition was due to disturbance of innervation. He wished to know whether there had been any discussion on this method of treatment in London.

In reply to Dr. Markwell, Dr. Murphy said that there apparently had not been any difficulty with the wiring of the wards at Westmoreland Street; the patients had their electrocardiographs taken from a plug in the wall. The change in the appearance of the wave due to the lowering of the *S-T* interval was generally due to too much digitalis. He mentioned the danger of the American machines in which wireless valves were used. The problem was difficult and different factors were brought in—currents *et cetera*. So far all work had been done on the Cambridge machine and they placed a moderate amount of confidence in it. *Angina pectoris* and coronary thrombosis had been elucidated and separated.

In reply to Dr. Patterson, Dr. Murphy said that he had seen Hurst use his method several times, but in no instance for the first time. Hurst always made an œsophagoscopic examination first and took a skiagram. The tube was well lubricated and the operation was performed gently. Hurst said that in many cases he got results quite as good as those in which an abdominal operation was performed and the dilatation performed through the stomach. Hurst did not mention Plummer's method, but he pointed out the dangers of using too much force and of tearing the cardiac sphincter.

Dr. Murphy looked upon achalasia as a neuritis, as a number of instances had occurred in pernicious anæmia and he thought it was a sequel to Hunterian glossitis, spreading downwards and backwards.

ANNUAL MEETING.

THE ANNUAL MEETING OF THE SOUTH AUSTRALIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held in the Darling Building, University of Adelaide, on June 26, 1929, DR. JOHN CORBIN, the President, in the chair.

Annual Report of Council.

The annual report of the Council was submitted to the members and was received.

Election.

At the annual meeting held last June, the following were elected:

President: Dr. John Corbin.
Vice-President: Dr. H. Gilbert.
Honorary Medical Secretary: Dr. E. Britten Jones.
Honorary Treasurer: Dr. W. A. Verco.
Members of Council: Dr. C. F. Drew, Dr. J. B. Gillen, Dr. E. A. H. Russell, Dr. R. J. Verco. Dr. P. T. S. Cherry and Dr. C. E. C. Wilson remained for another year.
Federal Committee: Sir Henry Newland and Dr. Bronte Smeaton.
Library Committee: Sir Henry Newland, Dr. F. H. Beare, Dr. E. Britten Jones, Dr. A. A. Lendon, Dr. W. Ray.

At the first meeting of the Council, held on July 5, 1928, the following subcommittees were appointed:

Scientific: The President, Sir Henry Newland, Dr. C. F. Drew, Dr. H. Gilbert, Dr. W. A. Verco, Dr. E. Britten Jones (Convener).
Lodge and Ethical: The President, Dr. P. T. S. Cherry, Dr. C. F. Drew, Dr. J. B. Gillen, Dr. R. H. Pulleine, Dr. E. A. H. Russell, Dr. R. J. Verco (Lay Secretary, Convener).
Post-Graduate: The President, Sir Henry Newland, Dr. W. A. Verco and Dr. E. Britten Jones (Convener).
Revision of Rules: The President, Sir Henry Newland, Dr. Bronte Smeaton (Lay Secretary, Convener).
Parliamentary Bills, Medico-Political and Public Health: The President, Dr. P. T. S. Cherry, Dr. C. E. C. Wilson (Convener).
Special Lodge: The President, Dr. E. A. Brummitt, Dr. A. Kyle-Gault, Dr. R. H. Pulleine, Dr. F. St. J. Poole, Dr. H. H. E. Russell, Dr. M. Sprod (Lay Secretary, Convener).
National Insurance: The President, Sir Henry Newland, Dr. Frank S. Hone, Dr. F. St. J. Poole, Dr. Bronte Smeaton (Lay Secretary, Convener).

Meetings.

Monthly General.—Nine meetings were held during the year, two of these being clinical evenings at the Children's Hospital. The attendances throughout were satisfactory.

The following programme was carried out:

1928—

July: Clinical evening at Adelaide Children's Hospital.
August: "Some Crippling Conditions and Their Treatment," opened by Dr. L. O. Betts, followed by Dr. H. Gilbert and Dr. Malcolm Scott.
September: Address by Dr. Arthur Burrows on "The Radium Treatment of Cancer in Australia."
October: Discussion on "Some Obstetrical Experiences," opened by Dr. T. G. Wilson, Dr. W. A. Verco and Dr. J. A. Bonnin.
November: Paper by Dr. Frank S. Hone on "Why do not we Prevent Respiratory Infections, Especially Pulmonary Tuberculosis?"

1929—

February: Clinical evening at Adelaide Children's Hospital.

March: Discussion on medical, legal and insurance aspects of workmen's compensation and accident insurance. Papers by Dr. J. Corbin, Mr. S. H. Skipper and Mr. L. K. McDonald.

April: Discussion on "The Correlation of the Pathology with the Symptoms and Treatment of Goitre," opened by Professor C. S. Hicks, Sir Henry Newland, Dr. C. T. Ch. de Crespigny.

May: Listerian Oration, Dr. F. P. Sandes on "The Cell as a Machine."

The Council met on thirteen occasions, the attendances being:

Dr. John Corbin	9
Dr. P. T. S. Cherry	13
Dr. C. F. Drew	12
Dr. H. Gilbert	13
Dr. J. B. Gillen	11
Dr. E. Britten Jones	12
Sir Henry Newland	8
Dr. R. H. Pulleine	7
Dr. E. A. H. Russell	11
Dr. Bronte Smeaton	11
Dr. W. A. Verco	8
Dr. R. J. Verco	9
Dr. C. E. C. Wilson	12

The Scientific Subcommittee met once and the following members attended: Dr. John Corbin, Dr. C. F. Drew, Dr. H. Gilbert, Dr. E. Britten Jones, Sir Henry Newland, Dr. W. A. Verco.

The Post-Graduate Committee met once and the following members attended: Dr. John Corbin, Dr. E. Britten Jones, Sir Henry Newland.

The Lodge and Ethical Subcommittee met three times, the attendances being:

Dr. John Corbin	1
Dr. P. T. S. Cherry	3
Dr. C. F. Drew	2
Dr. H. Gilbert	2
Dr. J. B. Gillen	3
Dr. R. H. Pulleine	2
Dr. E. A. H. Russell	2
Dr. R. J. Verco	2

The Special Lodge Subcommittee met four times, the attendances being:

Dr. E. A. Brummitt	4
Dr. John Corbin	3
Dr. A. Kyle-Gault	4
Dr. R. H. Pulleine	3
Dr. F. St. J. Poole	4
Dr. H. H. E. Russell	3
Dr. M. Sprod	2

The Parliamentary Bills Subcommittee met on two occasions, the attendances being:

Dr. John Corbin	2
Dr. P. T. S. Cherry	2
Dr. C. E. C. Wilson	2

The Library Committee met on two ocasions, the attendances being:

Dr. F. H. Beare	2
Dr. E. Britten Jones	2
Dr. A. A. Lendon	2
Sir Henry Newland	2
Dr. W. Ray	1
Sir Joseph Verco	1

Federal Committee.

Sir Henry Newland and Dr. Bronte Smeaton represented the Branch on the Federal Committee and both attended the meetings held in Sydney and Melbourne respectively.

Representation on Boards.

South Australian Dental Board: Dr. R. H. Pulleine and Dr. A. R. Southwood were nominated as the medical members of the Board.

Membership.

The membership of the Branch now stands at 395. The number of new members elected was 26, the balance representing the difference between transfers "in and out" after deducting deaths *et cetera*. It is with much regret that the deaths are recorded of Dr. R. McM. Glynn and Dr. W. T. Hayward.

Listerian Oration.

The Council invited Dr. F. P. Sandes, of Sydney, to deliver the Listerian Oration for 1929. Dr. Sandes chose for his subject "The Cell as a Machine" and a large number of members was present. The Council desires to officially thank him for his address.

New Model Lodge Agreement.

The Council regrets that the new model lodge agreement has not been finalized. At the time the last report was submitted there was every prospect that the negotiations would terminate satisfactorily at an early date, but the attitude of the South Australian friendly societies at a later stage in regard to the country lodges made further progress impossible. After several conferences the Special Lodge Committee submitted their report to Council and it was then decided to recommend the country doctors to make their individual arrangements with the lodges.

The country doctors were notified accordingly and although a number of them have failed to advise the Lodge Committee particulars of the agreement arrived at from the many reports to hand, the rates and fees asked for in the country centres are being obtained. It has not been possible therefore to have the new model lodge agreement prepard for signature, but negotiations are still proceeding and finality should be reached shortly.

Library.

During the year the Council made a special donation of fifty pounds from the library fund to the Darling Library. As a result of this grant a large number of new books and periodicals have been added to the library. The attention of members is drawn to the facilities that are available to them as members of the South Australian Branch of the British Medical Association. The medical library is at their disposal and books may be taken out, on certain conditions, if so desired.

Adelaide Permanent Post-Graduate Committee.

At a meeting of the Post-Graduate Committee held on September 21 last, recommendation was made to the Council that a larger committee be formed, to be called the Adelaide Permanent Post-Graduate Committee, and was approved. The following are represented on the Committee: The Faculty of Medicine, the Adelaide Hospital, Queen's Home, the Children's Hospital, in addition to the President and Medical Secretary of the Branch and two Honorary Secretaries appointed by the Council.

Work of Sections.

The Eye, Ear, Nose and Throat Section has held nine meetings during the year, which have been well attended. This section consists of fourteen members.

The Section of Clinical Medicine which has been recently formed, has held two meetings during the year, one of which was held at the Students' Laboratory, Adelaide Hospital. There are forty-seven members attached to this section.

Cine-Kodak.

The Branch is indebted to Dr. G. H. Burnell, who presented a "Cine-Kodak" for the use of members. In order to complete the outfit a projector was purchased from the library funds at a cost of £79 10s. The camera is at the disposal of members desiring to use it for scientific purposes and is stored with Dr. J. Stanley Verco on behalf of the Branch.

Alteration of Date of Annual Meeting.

Owing to the inability of many members to attend the annual meeting when held in the afternoon, the advisability of holding the meeting in the evening, when a larger number could be present to hear the presidential address,

was considered and the Council decided that the annual meeting this year should be held on Wednesday, June 26, at 8.30 p.m., and the annual dinner on Thursday, June 27.

Volunteer Service.

A letter was received by the President from the Premier, October 12, 1928, thanking those members of the Branch who enlisted for service in connexion with the camp of Volunteer Police Constables, established at Port Adelaide.

Jubilee of the Branch.

The inaugural meeting of the Branch took place on June 19, 1879, and it was felt by the Council that a fitting recognition of the event should be made. A special general meeting was called on March 19 last to decide what form the celebration should take. It was decided to hold a reception and conversazione on the evening of June 19 next. The Council of the University have kindly lent portion of their buildings for the occasion. Strong subcommittees have been formed with the support of the professorial staff of the University and the function promises to be a great success and one in every way worthy of the Branch.

Entertainment of Members of the British Medical Association from Overseas.

During the year the President entertained Professor Fraser, Dr. Sampson Handley and Sir Charles Ballance, of the parent Association on behalf of the Branch.

The President also entertained the Honourable Dr. Earle Page and members of the Council, when an unofficial discussion took place on national insurance.

Complimentary Dinner to Sir Henry Newland, C.B.E., D.S.O.

The Council decided that the annual dinner last year should be a complimentary dinner to Sir Henry Newland. This took place at the South Australian Hotel on June 28, 1928. A record number of members attended and the function was a great success.

Death of Sir George Syme, K.B.E., M.S., F.R.C.S.

The Council desires to place on record its regret at the death of Sir George Syme and his loss to the medical profession. At the Memorial Service held in Melbourne on Sunday, May 12, 1929, Sir Henry Newland represented the Branch and was one of the speakers.

(*Signed*) JOHN CORBIN,
President.

Financial Statement.

The Honorary Treasurer, Dr. W. A. Verco, submitted the various accounts and balance sheet of the Branch and moved their adoption. The motion was carried.

Income and Expenditure Account for the Year ended December 31, 1928.

EXPENDITURE.	£ s. d.	£ s. d.
British Medical Association—		
London Subscriptions paid ..	712 1 3	
London Subscriptions due on unpaid Subscriptions	21 13 6	
		733 14 9
THE MEDICAL JOURNAL OF AUSTRALIA		
Payment for journals	658 14 0	
Payments due on unpaid Subscriptions	21 5 0	
		679 19 0
Depreciation on Furniture		16 3 6
General Expenses—		
Delegates' Expenses	4 10 0	
Legal Expenses	5 7 0	
Exchange	6 0 8	
Telephone	30 3 11	
Audit Fees	7 7 0	
Printing and Stationery	48 9 1	
Duty Stamps	5 0 0	
Postages and Telegrams	33 19 11	
Rent paid to University	3 3 6	
Advertising	0 15 0	
		144 16 1
Sundry Payments		38 12 7
Salary	487 10 0	
Less Proportion Medical Hall Company	247 8 9	
		240 1 3
Office Rent		50 0 0
Lister Medal presented 1928		1 14 2
Federal Committee—		
Capitation Grant		39 0 0
		£1,944 1 4

INCOME.	£ s. d.	£ s. d.
Subscriptions Received—		
Country Members	542 13 0	
City Members	1,080 3 6	
Sundry	24 16 6	
		1,647 13 0
Subscriptions due and unpaid ..		70 18 0
Interest		20 0 0
Capitation Fees from British Medical Association, London ..		7 14 6
Profit on Medical Certificate Books		0 13 5
Transfer to General Fund		197 2 5
		£1,944 1 4

Library Fund Account, December 31, 1928.

	£ s. d.		£ s. d.
To University of Adelaide, Special Grant	50 0 0	By Balance brought down, December 31, 1927	362 18 4
„ University of Adelaide, Library Grant ..	50 0 0	„ Savings Bank Interest	10 12 0
„ Balance carried down	386 15 4	„ Transfer from General Fund Account, 224 Full and 5 Half Members at 10s.	113 5 0
	£486 15 4		£486 15 4

General Fund Account.

	£ s. d.		£ s. d.
To Refund Subscriptions	3 16 6	By Balance brought down, December 31, 1927	3,140 6 11
„ Library Fund Account: Being 224 Full and 5 Half Members at 10s.	113 5 0		
„ Deficit	197 2 5		
„ Balance carried down	2,826 3 0		
	£3,140 6 11		£3,140 6 11

Balance Sheet as at December 31, 1928.

LIABILITIES.	£ s. d.	£ s. d.	ASSETS.	£ s. d.	£ s. d.
Subscriptions paid in advance		12 9 0	Plant and Fittings	176 19 0	
British Medical Association	21 13 6		Less Depreciation	16 3 6	
THE MEDICAL JOURNAL OF AUSTRALIA	21 5 0				160 15 6
		42 18 6	Investments—		
Federal Committee		39 0 0	Commonwealth Loan (5%, 1948)	403 12 0	
Sundry Creditors		13 14 2	British Medical Hall Company, Limited	1,850 0 0	
Library Fund		386 15 4			2,253 12 0
General Fund		2,826 3 0	Delineascope (Library Fund)		55 2 10
			Lister Medals and Dies on Hand		16 17 6
			Savings Bank (Library Fund)		185 2 6
			British Medical Hall Company, Limited—Loan		450 0 0
			Subscriptions Owing		70 18 0
			Stocks—		
			Medical Certificate Books	6 10 9	
			Hospital Forms	1 3 3	
					7 14 0
			British Medical Hall Company, Limited		100 0 0
			Cash Balances—		
			Bank Balance	18 14 11	
			Cash in hand	2 2 9	
					20 17 8
		£3,321 0 0			£3,321 0 0

W. A. VERCO, Honorary Treasurer.
WALTER C. DOBBIE, Lay Secretary.

Audited and found correct subject to the following remarks: The sum of £399 17s. 9d. representing subscriptions to the British Medical Association and THE MEDICAL JOURNAL OF AUSTRALIA in respect of previous years is included in the above expenditure. Of the amount of salary received from the Medical Hall Company, Limited, £147 8s. 9d. was due last year. Subject to the adjustment of these amounts the result of this year's transactions would show a surplus of £55 6s. 7d. instead of a deficit of £197 2s. 5d.

C. W. L. MUECKE,
Chartered Accountant (Aust.),
Auditor.

Adelaide,
May 24, 1929.

Election of Office-Bearers.

The President announced the following results of the election of office-bearers and members of Council:

President: Dr. H. Gilbert.

Vice-President: Dr. C. E. C. Wilson.

Honorary Medical Secretary: Dr. A. D. Lamphee.

Honorary Treasurer: Dr. W. A. Verco.

Members of Council: Dr. C. F. Drew, Dr. J. B. Gillen, Dr. P. S. Messent, Dr. F. St. J. Poole, Dr. E. A. H. Russell and Dr. R. J. Verco.

Delegates on the Federal Committee: Sir Henry Newland and Dr. Bronte Smeaton.

President's Address.

DR. J. CORBIN, the retiring President, delivered his address (see page 354).

JUBILEE OF THE SOUTH AUSTRALIAN BRANCH.

ON June 19, 1879, at a meeting of medical practitioners of Adelaide it was resolved on the motion of the late Thomas Wilson Corbin, seconded by the late James Payne Baker, that a society should be formed to be known as the South Australian Branch of the British Medical Association. The society was formed at that meeting and in the following year received recognition from the British Medical Association. Fifty years have passed and on June 19, 1929, under the presidency of Dr. John Corbin, the son of the mover of the motion referred to above, the anniversary of the foundation was celebrated at the University of Adelaide. The function took the form of a scientific conversazione to which members of the public were invited. Among those present were His Excellency Sir Alexander Hore-Ruthven, the Governor of South Australia, Lady Stonehaven, Lady Hore-Ruthven, Sir George Murray, the Chancellor of the University, Sir William Mitchell, the Vice-Chancellor of the

University, the Lord Mayor and Lady Mayoress of Adelaide and many other distinguished citizens.

In the Physics Department of the University Professor Kerr Grant displayed many exhibits and gave demonstrations in connexion with various physical phenomena that have a definite application to medical science. In the Department of Anatomy Professor H. H. Woollard displayed many interesting histological preparations and showed how sections were prepared, cut and mounted for microscopical study. These exhibits were adjusted in such a manner that their lessons could be understood without scientific training or knowledge of chemistry or physics. Professor Hicks gave the visitors a peep into the modern methods of study of the physiological processes of the body, including metabolism and thermic control. Professor T. Brailsford Robertson confined his attention to vitamins and growth problems. Professor Harvey Johnson in the Department of Biology dealt with parasites, insects and snakes and their venoms.

Bacteriology, immunology and protozoology provided ample material for Professor J. B. Cleland and Dr. L. V. Bull to charm and interest the medical as well as the non-medical guests. The Canti film attracted much attention and proved to be the most popular of the exhibits.

NOMINATIONS AND ELECTIONS.

THE undermentioned has been nominated for election as a member of the New South Wales Branch of the British Medical Association:

Thomas, Ivor Gwynne, M.B., B.S., 1929 (Univ. Sydney), Sydney Hospital, Sydney.

THE undermentioned have been elected members of the Victorian Branch of the British Medical Association:

Pickering, John Campbell, M.B., B.S., 1928 (Univ. Melbourne), Base Hospital, Bendigo.

Rosenfield, Clifford Leslie, M.B., B.S., 1926 (Univ. Melbourne), D.L.O. (London), 10, Tennyson Street, St. Kilda, S.2.

Smith, Leslie, M.B., B.S., 1929 (Univ. Melbourne), Alfred Hospital, Prahran.

Obituary.

OLIVER PENFOLD.

IT is given to few men to engage in medical practice for a period of more than sixty years and to die in harness. Dr. Oliver Penfold whose death was recorded in THE MEDICAL JOURNAL OF AUSTRALIA of August 10, 1929, died at the age of eighty-five years with a record of service seldom equalled.

Oliver Penfold was born in the Parish of Saint Clement Danes, London, on July 15, 1844. The youngest son of Oliver and Helen Penfold, he was indentured in 1859 to Dr. Robert Cross, a physician of Spring Gardens, London. He was educated at King's College, London, and on leaving in 1867 received the diploma of Associate of the College. In 1866 he had passed the preliminary scientific examination for the degree of Bachelor of Medicine of the University of London and in 1867 he became a member of the Royal College of Surgeons of England and a licentiate of the Society of Apothecaries. In the same year he became a resident surgeon at the Poplar Hospital, London, and was promoted to be surgeon to the Nineteenth Middlesex Rifles, having joined that corps as a volunteer in 1859. In 1869 he was appointed surgeon to the ship *Highflyer* and came to Melbourne. For a few months he was partner with Dr. Wilson at Bridge Road, Richmond. In 1870 he was appointed assistant surgeon to the Bendigo Hospital. He remained in that position for two years and three months and then entered into private practice. In 1881 he prepared calf lymph and introduced the practice of vaccination to Bendigo. He supplied the Governments of Queensland, South Australia and Tasmania with lymph until pressure of private practice compelled him to desist.

He was one of the oldest members of the Medical Society of Victoria and contributed articles to *The British Medical Journal*, *The Lancet* and the *Australian Medical Journal*. He was a medical referee to the Education Department, Commonwealth medical referee for invalid pensions and medical officer to the Bendigo Benevolent Asylum. He held all these posts until the day of his death.

Oliver Penfold took an interest in the general affairs of the community and held numerous offices. For many years he was a justice of the peace. He was a director of several gold mines in Bendigo and in its early years was a member of the art gallery committee. He took an interest in the School of Mines, Bendigo, and held the offices of president, treasurer and trustee. He was greatly interested in music. In 1886 he was elected President of the Sandhurst Liedertafel and composed a four-part song for the society. He also composed piano and organ music, songs, gavottes, a cantata and quantities of church music. His latest hymn tune, "Nearer, My God, to Thee," was played on the bells of Saint Paul's Church, Bendigo, as his funeral left his residence. Of his personal qualities a great deal might be written. The following letters by two of his friends will show what manner of man he was.

Dr. T. C. Ker writes:

As one of the late Dr. Penfold's closest friends, meeting him almost daily for many years, I should like to mention one or two facts which I think are worthy of being recorded.

With a new generation growing up and the advent of young doctors it was inevitable that he should see the enormous practice he once had decreasing. He never showed the least resentment with regard to this, but took it as a matter of course and was on excellent terms with the younger practitioners. When I came to Bendigo he arranged a public appointment for me and he has done the same for younger men since.

There was never the least sign of loss of keenness of intellect and I have never known him forget even a trivial appointment or fail to fulfil a promise.

When we formed a medical society here twenty-one years ago, he was unanimously elected the first president and was reelected to that position for several consecutive years. This society later became a division of the Victorian Branch of the British Medical Association. I cannot say much of his earlier days, because though we had many long talks together, he would mainly converse on present day happenings and had very little tendency to be reminiscent.

My last talk with him was two days before he died and his mind was as clear as ever, his conversation tending mainly to questions as to what his various friends were doing.

Dr. W. J. Long writes:

Thirty-six years ago, on arrival at the Bendigo Hospital to take up my second resident hospital position, I was called upon by the late Oliver Penfold, surgeon. This kindly act to his junior was naturally much appreciated by me and led to a friendship lasting for the rest of our days. It has been a mutual pleasure meeting either at work or for a game of billiards after the day's work was over.

Penfold's main hobby was music, more particularly composition, numerous choral anthems, hymns, songs and pianoforte pieces, all of good calibre having been published. Sometimes his musical mind was over-active and up out of bed or under a street lamp-post his thoughts insisted on an immediate sitting.

Then, as if work and play were not enough, he started and carried through a movement for a children's ward at the Bendigo Hospital. This is still being carried on. Next he initiated a movement for a local sanatorium for the treatment of tuberculosis. He was the means of raising £3,000 for this. A piece of land in an ideal position was obtained, but the Government, thinking that the manage-

ment of the cases would be better carried out in the hospital grounds, the matter is in abeyance at present. When the ward is built I hope that it will bear his name as a reminder of the good work he has done for his fellow men.

We miss his cheery presence in our club and in our homes. However, he felt that his time had come, so he stopped work, said good-bye to his friends and faced his new life with equanimity.

REGINALD GEORGE RUDDLE.

DR. REGINALD GEORGE RUDDLE who died at his home in East Melbourne on July 6, 1929, was educated at Stawell Grammar School. He became an undergraduate at the University of Melbourne in 1881 and graduated with third class honours in 1886, receiving the degrees of bachelor of medicine and bachelor of surgery. In 1889 he qualified for the degree of doctor of medicine. After graduation he was appointed to the resident staff of the Melbourne Hospital where he remained for several years. He then proceeded to the Stawell Hospital. He afterwards went to Daylesford where he engaged in private practice for over thirty years. Subsequently he practised for several years at Elmore. Reginald George Ruddle will be sorely missed by those amongst whom he worked, and will be remembered for his kindliness and generosity.

Dr. Percy Liddle writes:

When I first entered the Medical School of the Melbourne University at the beginning of 1883 "Reggie" Ruddle had just completed his second year. In my senior years when attending the hospital he was one of the resident surgeons. Later on, in 1901, we met again at Daylesford and for the next eighteen years were closely associated both socially and in our daily work. Ruddle was, I think, about the most generous-hearted man I ever met, kindly and attentive to his patients, rich and poor especially, loyal to his comrades, ever ready to help and advise. Ruddle was gifted with a most wonderful memory and was a widely read scholar. Those of us who knew him best, appreciated his true value and he will be sadly missed.

Correspondence.

HYPERTROPHIC PYLORIC STENOSIS.

SIR: Dr. Melville Chinner, in your issue of August 3, reports the case of an infant suffering from pyloric stenosis who was cured by operation after medical treatment had failed. I assure him that good results may be expected from medical treatment, despite the fact that in none of the cases he has seen did it pull the patient through. My experience has been the reverse. I saw at the one time in one ward five infants all of whom, suffering from pyloric stenosis, had been treated by medical means and were either cured or well on the way to recovery. I have never seen a case treated medically which subsequently has died. On the contrary I have seen many cases at autopsy in which the Rammstedt operation had been performed. I do not deny that part of the mortality associated with operation is rightly attributable to the depreciation of the infant's chances owing to the inadequacy of medical treatment.

Dr. Chinner does not mention atropine in the treatment. Its use in steadily increasing doses has in my opinion in cases which have come under my observation, definitely quelled the pyloric spasm which, I believe, increases the difficulty of nourishing the infant, and it has led to a gradual, sometimes a rapid rise in weight. The patients stand the drug very well and after it has been pushed to the point of producing symptoms of poisoning, it may be resumed after an interval without harm. Its use produces, I am convinced, variably but definitely beneficial results. A useful routine is to give at first three minims of a one in a thousand solution of atropine sulphate three times a day twenty minutes or half an hour before a feed. It may be increased by one minim at a dose given four or five times daily till as much as fifty minims are being given. Adrenalin in some cases seemed to mitigate the spasm. It may be given alternatively to atropine before the feeds. In the Kaiser and Kaiserin Friedrich Kinderkrankenhaus, Berlin, where I used it, it was the custom to give one-quarter milligramme doses of a one in a thousand solution of suprarenin hydrochloride intracutaneously in the forearm ten minutes before a feed.

Careful individual nursing is, of course, essential. If possible, the same nurse should be in constant attendance upon the child. The fact that these children so often are of a highly strung temperament renders it desirable that every source of excitement should be removed. I have seen striking improvement follow immediately upon the removal of the child from the ward to a room. Also, these children progress better in the home than in a hospital. As long as the stomach contains large rests, it is useful to wash the stomach out. The child should be fed in the recumbent position slowly, by bottle or spoon. It should be propped up in the cot with pillows immediately after the feed in order to facilitate eructations which otherwise cause regurgitation. The loss of fluid through vomiting is supplied by Ringer's solution by rectum or subcutaneous injection. Because of the difficulty of getting food through the pyloric sphincter and the losses these children sustain through vomiting, the feeding is of the first importance. One teaspoonful of Carlsbad water before the feed to combat acidity where hyperchlorhydria exists in breast fed children, may be of specific use. The watchword in regard to the nourishment is that it shall furnish sufficient calories in the least volume for the reasons indicated. The composition is of less consequence. Breast milk with the addition of semolina boiled to a thick pap may be used. Finkelstein in Berlin used his protein milk (the recipe for which is given in Tallerman and Hamilton's recent text book), with the addition of 15% to 20% sugar, half cane sugar, half dextri-maltose, without the addition of water. This latter has a caloric value of 1,600 per litre, about two and a half times that of cow's milk or breast milk. Milk drawn from the mother's breast is added to the protein milk for its immunity value. A butter-flour mixture containing 7% flour, 5% butter and 5% sugar with a similar caloric value may be used. Eight or ten feeds daily are given at intervals of two and a half hours. Finkelstein's mortality figures for cases treated in his institution by the non-operative method during the years 1925 to 1929 are of interest. The mortality was 15%. Twenty-two cases were treated, eighteen recovered and three died. Of the deaths, one was of a premature infant on the sixth day of treatment, another admitted on the third day of life died on the seventh, the third died of pneumonia after five weeks' treatment. The average duration of treatment to the time of cessation of symptoms was eleven weeks. J. Ibrahim, of Jena, claims a mortality in fifty-two cases treated medically by him, of 1%.

This note, may I add, is not written from the standpoint of bigoted partisanship, but to indicate a method which I believe is worth a trial. I commend it to Dr. Chinner's notice and wish him, should he use it, a success equal to that with which I have seen it attended.

Yours, etc.,

J. L. MEAGHER.

71, Collins Street, Melbourne.
August 6, 1929.

ILEOSTOMY IN GENERAL PERITONITIS.

SIR: The editorial footnote to my letter on this subject in THE MEDICAL JOURNAL OF AUSTRALIA of July 20 contains this comment: "The concluding sentence in our article appears to sum up the experience of surgeons on the latter subject (general peritonitis of septic origin). Enterostomy or entero-colostomy advocated by Handley is a desperate measure used as a last hope and is sometimes effective."

May I be permitted to say that Sampson Handley first published his method of operating (anastomosis of the

jejunum with the transverse colon) in *The British Medical Journal* in April, 1916.

Almost at the same time and in the same journal Victor Bonney published his method of intestinal drainage (caecostomy with jejunostomy).

As will be seen on page three of the reprint from the *British Journal of Surgery*, the paper by the late Arthur Nyulasy shows that he had already a year previously published in *The Lancet* of October 9, 1915, a record of six consecutive cases of septic peritonitis, all successfully dealt with in the Perth Hospital by caecostomy alone and three of the cases had been reported in the *Australasian Medical Gazette* (May 24, 1913), no less than three years previously. Neither of the distinguished surgeons before mentioned was able to produce an equal record of successful cases up to and even after this time.

However, it is clear that three methods of intestinal drainage are now available to the surgeon confronted with a desperate case of septic peritonitis, namely, caecostomy alone (Nyulasy), caecostomy *plus* jejunostomy (Bonney), anastomosis of the jejunum with the transverse colon (Handley) and any one of these methods is sometimes effective.

Yours, etc.,

FRANK A. NYULASY.

Melbourne,
July 24, 1929.

INCOME TAX DEDUCTIONS.

SIR: May I crave a little space to impart some information which may not be known to members of the profession generally.

In an income tax return, where a motor car is used for professional purposes and later sold, the difference between the depreciated value of the car (that is, the original purchase price less the annual depreciations) and the amount realized for it, is an allowable deduction.

This is the gist of a letter received by me on inquiry from the Commissioner of Taxation, Sydney.

Yours, etc.,

HAMPDEN MURPHY.

Tweed Heads,
August 12, 1929.

INFLUENZA AND INFLUENZAL COLDS.

SIR: In my letter of June 3 I used the insolation or sun bath under heading 2. Any reference to magnesia should be taken to include the drugs referred to under heading 6, and a teaspoonful of this may be tried two-hourly, whilst the patient is awake, with a diet of small quantities of egg and milk.

Yours, etc.,

R. A. PARKER.

140, Sackville Street, Kew.
July 20, 1929.

THE CLERGY AT THE BEDSIDE—AND ELSEWHERE.

SIR: In an article recently published in THE MEDICAL JOURNAL OF AUSTRALIA, Dr. R. Scot Skirving, of Sydney, has seen fit to make some very severe criticisms of the clergy in general and more particularly of the way in which they exercise one of their most important and intimate functions, *videlicet*, that of ministering at the bedside of the dying. These criticisms were written in a medical journal and for medical men; but that journal is seen by many people outside of the profession. Anyone can obtain a copy. It is read greatly by university students in general; it is to be found in club-rooms and libraries and it is frequently read by the clergy themselves, not a few of whom have sons and daughters in the profession. No sooner had the article appeared than two medical men brought it under my notice and asked me, not without a slight touch of malicious joy, what I thought of it. In simple fairness, therefore, it would seem that the columns of the journal in which the criticism appeared, should be opened to some member of that calling which for ever gets more kick than ha'pence, for a reply.

Dr. Scot Skirving's most general contention is that "through lack of education . . . tact or common sense, the clergy on the whole fail not uncommonly in this portion of their high calling, and their performances are often distressing." This is a sufficiently serious charge to begin with against another calling "on the whole." I say nothing about tact or common sense, two qualities which a man either has or has not, whatever be his calling, but the sneer about want of education in the clerical profession, as compared with education in the medical profession, is rather amusing. If I were so minded I could easily reply with a somewhat crushing *tu quoque* argument, quoting the oft-repeated statements of authorities in the University of Sydney (including those of the Medical School) about the deplorable lack of general education among medical students "on the whole," more particularly as regards the mere ability to spell or to write and speak the King's English. But I forbear to say more about this; to do so would simply be to take a leaf out of the doctor's book. How stands it with the parsons in this matter of education? In the church to which I belong, the majority of the ministers are graduates in arts and not a few in other faculties as well; the same is largely true of many of the other churches. It would seem, therefore, that the average parson (and for the purpose of discussion we can speak only of the average) is at least able to hold up his head with the average "medico," when sweeping statements such as this are made about those of his calling. He might even be able to do more than just hold up his head.

"Of course," says Dr. Scot Skirving, "there are good and poor doctors, as there are good and inefficient parsons, but there is an undue proportion of the latter." On what authority does Dr. Scot Skirving make this last statement? How does he know? The statement is quite unverifiable and it is offensive. I venture to say that if one were to pick out a hundred doctors at random and a hundred parsons at random, the proportion of inefficients would be about the same in either case. There are plenty of misfits in every calling.

Not content with criticizing the ineptitude of the average clergyman at the death-bed, Dr. Scot Skirving goes on to question the value of such clerical ministrations at all. "In the supreme hour of departure," he asks, "what avails 'some pullulating rites extern and vain,' or prayers, official or extemporary, delivered in a professional voice or with an accent and diction which make it hard to catch the meaning of their words?" Here the doctor shows the cloven hoof of his prejudice against the clergy. Obviously he hates the whole business, well or badly done, and possibly those who engage in it as well; but leaving the doctor aside for the moment, let us try and look at the matter from the standpoint of the dying man. Who will doubt, for example, the tremendous comfort which is brought to a dying Roman Catholic, when the external rite of extreme unction is performed by a priest who, according to the Roman Catholic theology, is charged with special powers to perform this rite, and who is believed by the devout Roman Catholic to be so charged? Or consider the matter of official prayers by an Anglican clergyman. It hardly needs to be said that the devout Anglican does seek to hear the familiar words of the prayer book, however official, when dying, and that he seeks to hear them because he finds comfort in them. Or take, again, the extemporary prayers commonly used by ministers of the free churches; if these bring no comfort to the dying, why are we so frequently sent for by the dying, to pray with them? Whatever Dr. Scot Skirving may think of these various ways of offering spiritual help to the dying, the evidence that comfort is brought to the dying by these means is overwhelming. Again and again I myself have been thanked by dying people, with a pathetic gratitude, for prayers offered at the bedside, alike in cases

where the patient was fully conscious and where consciousness was dim and by relatives in cases where the patient was unconscious. I have even been so thanked by two members of the medical profession whom I visited in their last hours. My experience in this matter is simply a typical one.

It is rather surprising that Dr. Scot Skirving should know so much of what happens between the minister and the patient, for though I have ministered to scores of dying people, I do not recall one case where the doctor has stayed in the room while I prayed. From his abundant knowledge of what the clergy do at the bedside, Dr. Scot Skirving must surely make a practice of staying. If so, it would seem that he shows just that want of tact with which he so roundly charges the clergy, especially after his own admission that "unless we can be of some use in giving actual relief to suffering, I think the doctor is better away from the bedside of the dying." His presence would also argue a certain want of taste, for no clergyman could possibly do his best in these most intimate and delicate tasks, while a doctor so unsympathetic to his work remained in the room. In any case, it is in very bad taste to criticize what the clergy do in these moments, when they are about a task which might well make the most tactful and thoughtful person pause.

As Dr. Scot Skirving has such a dislike to the bedside ministrations of the average clergyman, he prefers that prayers, where required, should be offered by relatives and close friends, who are "in these cases less antipathetic and their prayers sweeter to those departing than the official supplications of priest or parson." Many of the clergy would prefer this too, but they know from experience, as Dr. Scot Skirving evidently does not, that in practice it is generally impossible to get relatives or friends to perform this office. In the majority of cases they simply could not do it. The offering of prayers aloud is not and has never been a part of their habit. Moreover, when the doctor speaks of the relatives and friends being "less antipathetic," he speaks in entire want of understanding of the intimacy of the spiritual relationship which frequently exists between a minister and his flock. In most cases the minister is the friend of his people, often the intimate friend, and he goes to the bedside of the dying less as an official than as a fellow human being who shares the same faith concerning the ultimate realities of life and death, and who, by virtue of his training, is able to talk about those things more freely.

For my own part, I am not ashamed to confess that in the hour and article of death I should like someone who believes deeply in that love of God, which, in the faith of all the churches, is the ultimate ground of the universe, should whisper into my ear some expression of that belief ere I depart hence; and at that moment I shall not be greatly concerned whether it is an official or unofficial person, an educated or uneducated person. I shall ask only that he be a sincere person.

When Dr. Scot Skirving has disposed, as he thinks, of the average clergyman in the exercise of his ministrations to the dying, he turns on the clergy in respect of the exercise of their functions in other directions. Their sermons, he says, are neither convincing nor helpful. "Anyone who listens-in on Sundays will know what I mean. In the majority of instances the sermons are not fitted to raise one's opinion of the intellectual attainments or the spiritual force of the preacher. Neither the matter of the discourse nor the manner of its delivery is comforting or uplifting." To Dr. Scot Skirving perhaps not. Nevertheless tens of thousands of people of all classes and the best in all classes listen to these sermons regularly every week, in spite of the preachers' lack of intellectual attainments or of spiritual force. One wonders what for. For most of us, the pay of our calling is so small, and the irritations attendant upon it so many, that we could not carry on at all were it not for the frequent expressions of appreciation which we receive from those who have found both comfort and uplift from our poor efforts. Beyond this we have little reward, but that little is priceless.

After having launched these bitter attacks against the clergy, Dr. Scot Skirving says that he does not "wish to be taken to have spoken disrespectfully of the clerical profession." He would have us believe, in fact, that he rather likes the clergy. Yes, just as Tom Tulliver in "Mill on the Floss," liked dogs, "that is to say, he liked throwing stones at them."

It is comforting to find that however little Dr. Scot Skirving likes the clergy in general, he admits that "besides religion and the policeman nothing else exists of value as a bulwark against anarchy and violence," and to express a hope "that a religion which teaches the message of the Galilean in some form will abide with us." That being so, what is to keep religion alive in the hearts of the people, unless it be the regular ministrations of the official church? Wherever there is life it always tends to organize itself and though the organization often tends to kill the life, without the organization the life itself would soon cease to be. If the church were to go, it would not be long before the religion which Dr. Scot Skirving wishes to keep alive, would follow. Meantime, the church still holds a very warm place in the hearts of millions in all lands. Many of those millions receive from the church the only moral and spiritual teaching they ever get and in spite of all criticism, the church is still the greatest single force for righteousness anywhere in the world.

But, "to our shame," admits Dr. Scot Skirving, ". . . the clergy are often not well supported. Many of us are indifferent and break away from all church membership." Alas, that is so. Indeed, unless I am greatly mistaken, I was myself for years a member of a church in which, I believe, Dr. Scot Skirving himself had a pew; but if he had, I have no recollection of ever seeing the doctor occupy it. That in itself would rather discount the value of some of his criticisms and especially of his vital belief in religion. The minister of that church was one of the most remarkable personalities in Australia, a man of "education, tact and common sense," whose tender ministries at the bedside were a striking feature of his work. Of course, Dr. Scot Skirving would say he was one of the exceptions; but what encouragement did the writer of these criticisms give to the notable exception?

In reply to my medical friends who asked me what I think of Dr. Scot Skirving's remarks about the clergy, I would sum up thus: (i) They are utterly irrelevant to the theme of his article and apart from the opportunity they afford him to express his prejudices, they should have been left out on that account alone; (ii) they are uncalled for, unjust and offensive; (iii) they are calculated seriously to disturb the most kindly relations which have always existed between the clerical and the medical professions and to make the work of the clergyman not easier, but harder; (iv) worst of all, they are calculated to increase the prejudice against the clergy which already exists in the minds of a great proportion of the young "medicos" who are now being turned out like "hot cakes" (very hot cakes) by our overcrowded medical schools. Most of these young "medicos" (I speak from a very intimate experience of them) have little religion and less philosophy, except the philosophy of a crude and crass materialism which they foolishly think to be a necessary concomitant of medicine, to increase their tendency to cynicism is to do a great disservice to them and to the cause of religion among them. Finally, I venture to hope that as an honoured and influential member of a gentlemanly profession, Dr. Scot Skirving may see his way to withdraw some of his aspersions on a body of men who, like the members of the medical profession, do a vast amount of good in the world, in spite of their many shortcomings, and who, unlike the members of the medical profession, get little for themselves in the by-going and often cannot even provide decently for their dependants when doctor and clergy can do no more for them.

Yours, etc.,

C. N. BUTTON, M.A., B.D., Ph.D.

St. Andrew's Kirk,
Ballarat, Victoria.
July 18, 1929.

Corrigendum.

MEDICAL REGISTRATION.

OUR attention has been called to an error in an article on medical registration which was published in the Education Number of this journal on August 31, 1929. The registration fee in Victoria at the present time is three guineas and no charge is made for the registration certificate.

Books Received.

THE LAW RELATING TO MEDICAL, DENTAL AND VETERINARY PRACTICE, by Fred Bullock, LL.D.; 1929. London: Baillière, Tindall and Cox. Demy 8vo., pp. 333. Price: 12s. 6d. net.

MEDICO-LEGAL PROBLEMS, by Lord Riddell: 1929. London: H. K. Lewis and Company, Limited. Demy 8vo., pp. 108. Price: 5s. net.

THE MEDICAL MUSEUM: MODERN DEVELOPMENTS, ORGANISATION AND TECHNICAL METHODS BASED ON A NEW SYSTEM OF VISUAL TEACHING, by S. H. Daukes, O.B.E., M.D., D.P.H., D.T.M. & H., Director of The Wellcome Museum of Medical Science; 1929. London: The Wellcome Foundation, Limited. Crown 4to., pp. 183, with illustrations.

HABITUAL CONSTIPATION AND ITS TREATMENT: AN ACCOUNT OF A NEW THERAPEUTIC METHOD, by M. H. Burnier, M.D. (Lausanne), M.R.C.S. (England), L.R.C.P. (London); Authorized Translation by Herbert Child, M.R.C.S. (England); 1929. London: Baillière, Tindall and Cox. Crown 8vo., pp. 81. Price: 3s. 6d. net.

ON PRESCRIBING PHYSICAL TREATMENT, by Matthew B. Ray, D.S.O., M.D. (Edinburgh); 1929. London: William Heinemann (Medical Books), Limited. Demy 8vo., pp. 190, with illustrations. Price: 10s. 6d. net.

Diary for the Month.

SEPT. 17.—Tasmanian Branch, B.M.A.: Council.
SEPT. 17.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
SEPT. 17.—New South Wales Branch, B.M.A.: Organization and Science Committee.
SEPT. 18.—Western Australian Branch, B.M.A.: Branch.
SEPT. 18.—South Sydney Medical Association, New South Wales.
SEPT. 24.—New South Wales Branch, B.M.A.: Medical Politics Committee.
SEPT. 24.—Illawarra Suburbs Medical Association, New South Wales.
SEPT. 25.—Victorian Branch, B.M.A.: Council.
SEPT. 26.—South Australian Branch, B.M.A.: Branch.
SEPT. 26.—New South Wales Branch, B.M.A.: Branch; Election of Members for Federal Committee.
SEPT. 27.—Queensland Branch, B.M.A.: Council.

Medical Appointments.

Dr. Max Alfred Rees (B.M.A.) has been appointed Certifying Medical Practitioner at Traralgon, Victoria.

* * *

Dr. David Duncan Cade (B.M.A.) has been appointed Acting Medical Superintendent of the Hospital for the Insane, Mont Park, Victoria.

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Dr. Alan Thomas Britten Jones (B.M.A.) has been appointed Acting Honorary Assistant Surgeon at the Adelaide Hospital, South Australia.

Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xvi.

IPSWICH HOSPITAL, IPSWICH, QUEENSLAND: Resident Medical Officer.
MAROOCHY DISTRICT HOSPITAL, QUEENSLAND: Medical Officer.
SAINT GEORGE DISTRICT HOSPITAL, KOGARAH: Resident Medical Staff.
THE WOMEN'S HOSPITAL, SYDNEY: Junior Resident Medical Officer.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 21, Elizabeth Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company, Limited. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Members accepting appointments as medical officers of country hospitals in Queensland are advised to submit a copy of their agreement to the Council before signing. Brisbane United Friendly Society Institute. Stannary Hills Hospital. Toowoomba Friendly Societies Medical Institute.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Contract Practice Appointments in South Australia. Booleroo Centre Medical Club.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Medical practitioners are requested not to apply for appointments to positions at the Hobart General Hospital, Tasmania, without first having communicated with the Editor of THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, Sydney. (Telephones: MW 2651-2.)

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